



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

### Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

### About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>





























# ΓΕΩΠΟΝΙΚΑ.

---

## AGRICULTURAL PURSUITS.

---

TRANSLATED FROM THE GREEK,  
BY THE REV. T. OWEN, M. A.  
OF QUEEN'S COLLEGE, IN THE UNIVERSITY OF OXFORD,  
AND RECTOR OF UPTON SCUDAMORE, IN  
THE COUNTY OF WILTS.

---

VOL. II.

---

Ταῦτα γὰρ αὐτὰ συγγράμματα, ὥστε μὴ δοξῶ τι παραλιπαρεῖν τῶν τοῖς Ἀρχαίοις  
διηγημένων. ΓΕΩΠ. Lib. i. c. 14.

I have written these things for this reason, that I may not seem to omit  
any of the things related by the Ancients.

---

LONDON:  
PRINTED FOR THE AUTHOR,  
AND SOLD BY J. WHITE, 63, FLEET-STREET.

1806.

---

J. Young, Printer, Playhouse-Yard, Blackfriars.





Bee Collection  
RTYMB  
G 2925  
1905  
2

## CONTENTS.

### BOOK X.

1. **C**ONCERNING a garden. *Florentinus.*
2. At what time it is necessary to plant trees. *The same.*
3. What trees you are to plant from seed, and what from suckers, and what from truncheons, and what from layers. *Didymus.*
4. Concerning the planting of palm-trees. *Leontinus.*
5. Concerning the method by which the fruit of the palm-tree flourishes. *Democritus.*
6. Concerning palm shoots, and the use of them. *Didymus.*
7. Concerning the seasons for planting the citron, and the care of it, and how citrons are to become red. *Florentinus.*
8. Another concerning the planting of the citron. *Anatolius.*
9. To make the citron bear the representation of any bird, or imitate the face of a man, or of some other animal. *Africanus.*
10. Concerning preserving and laying up citrons. *Sotion.*
11. Concerning the planting of pistacia-trees. *Diophanes.*
12. Another concerning the planting of pistacia-trees. *Damogeron.*
13. Concerning the planting of the duracina, and the care of them. *Florentinus.*
14. To make peaches grow with marks on them. *Democritus.*

15. To make the duracina red. *The same.*
16. To raise peaches without stones. *Africanus.*
17. Concerning the grafting of peaches. *Didymus.*
18. Concerning the season for planting apple-trees, and the care of them: *Anatolius.*
19. To make apples red. *Berytius.*
20. Concerning grafting apple-trees. *Diophanes.*
21. Concerning the keeping of apples. *Apulcius.*
22. Concerning the planting of pears, and the care of them. *The Quintilii.*
23. Another concerning the planting of pears. *Diophanes.*
24. Concerning the grafting of pears. *Tarentinus.*
25. Concerning the keeping of pears. *Democritus.*
26. Concerning the planting of quinces. *Didymus.*
27. To make the quince assume any appearance. *Democritus.*
28. Concerning the keeping of quinces. *The same.*
29. Concerning the planting of pomegranates, and the care of them, &c. *Florentinus.*
30. That pomegranates may not crack. *Africanus.*
31. To make pomegranates grow without kernels. *The same.*
32. A branch of the pomegranate keeps off venomous beasts. *The same.*
33. That pomegranates may grow red. *Didymus.*
34. How to make a pomegranate, that is sour, sweet. *Paxamus.*
35. That the pomegranate-tree may produce much fruit. *Democritus.*
36. Having gathered a pomegranate from the tree, to enumerate the kernels. *Africanus.*
37. Concerning the grafting of the pomegranate. *Florentinus.*

38. Concerning keeping, and laying up, and preserving pomegranates. *Berytius.*
39. Concerning the planting of damsons. *Pamphilus.*
40. Concerning the keeping of damsons. *The same.*
41. Concerning the planting of cherries. *Florentinus.*
42. Concerning the keeping of cherries. *The same.*
43. Concerning the planting of the jujube. *Vindanionius.*
44. Concerning keeping the fruit of the jujube. *The same.*
45. Concerning the season of planting figs, and the care of them. *Didymus.*
46. That fig-trees that are planted may be freed from worms. *The same.*
47. To make figs have characters. *Democritus.*
48. That the fig-tree may not cast its fruit. *The same.*
49. To reclaim the wild fig. *Africanus.*
50. Concerning an impetigenous tree. *Leontinus.*
51. To make the fig have a cathartic quality, and the tree produce early fruit. *Democritus.*
52. Concerning grafting the fig-tree. *Leontinus.*
53. That the fruit of the fig-tree may be white on one side, and black or red on the other. *Africanus.*
54. That the dry fruit of fig-trees, which are called *ischades*, may keep without putrifying. *Paxamus.*
55. Concerning sour or immature figs. *Africanus.*
56. How one may keep green figs fresh as on the trees. *The same.*
57. Concerning the season for planting almonds, and the care and grafting of them. *Florentinus.*
58. When you ought to gather the almonds. *The same.*
59. To make bitter almonds sweet. *Africanus.*
60. To make almonds grow with characters on them. *Democritus.*
61. To make the almond produce sterile fruit. *The same.*

62. Concerning grafting the almond-tree. *Paxamus.*
63. Concerning the season for planting chesnuts. *Damogeron.*
64. Concerning the season for planting nuts, and the care of them. *The same.*
65. Concerning grafting the nut-tree. *The same.*
66. That nuts without shells become productive. *Africanus.*
67. That the nut or any other tree may be dried up. *Democritus.*
68. Concerning the Pontic nut, called the small nut. *Didymus.*
69. Concerning mulberries, and how they become white. *Berytius.*
70. Concerning keeping and laying up mulberries. *The same.*
71. Concerning the planting of the medlar. *Didymus.*
72. Concerning the planting of the carob-tree. *Anatolius.*
73. Concerning the explanation of the names of esculent fruit and nuts. *Democritus.*
74. Concerning the difference between fruit and nuts. *The same.*
75. Concerning the time and manner of grafting trees. *Florentinus.*
76. Concerning budding and grafting, and what sorts of trees are capable of budding and grafting. *Diophanes.*
77. Concerning the season and mode of inoculating. *Didymus.*
78. When it is necessary to dress the trees. *Leontinus.*
79. For siderated trees. *Democritus.*
80. That winged creatures may not fall upon trees. *The same.*
81. Concerning the care of plants. *Varro.*



82. That all trees may bear more fruit. *Africanus.*
83. To make a barren tree bear fruit. *Zoroastres.*
84. Cure for trees, healing every blemish. *Paxamus.*
85. How one may transplant large and fruitful trees. *Anatolius.*
86. How one may raise plants from seeds brought from a distance. *Pamphilus.*
87. That trees may not cast their fruit. *Sotion.*
88. Concerning the cure of trees that cast their blossoms, or the leaves of which fall off. *The Quintilii.*
89. That plants and seeds may not be hurt by cattle, or other beasts. *Democritus.*
90. That neither trees nor vines may be hurt by worms, nor by any other animal. *Florentinus.*

BOOK XI.

1. What trees are ever-green, and do not shed their leaves in winter.
2. Concerning the bay-tree.
3. Concerning the grafting of the bay, and the sowing and transplanting of it. *The Quintilii.*
4. Concerning the cypress.
5. Concerning the planting of the cypress. *Didymus.*
6. Concerning the myrtle.
7. Concerning the planting of the myrtle. *Florentinus.*
8. Concerning the keeping of the myrtle berries. *The same.*
9. Concerning the box-tree. *The same.*
10. Concerning the pine.
11. Concerning the planting of the pine.
12. Concerning the lentisc.
13. Concerning the willow.
14. Concerning the ilex.

15. Concerning the dendrolihanus.
16. Concerning the planting of the dendrolibanus.
17. Concerning the rose.
18. Concerning roses, and how one may make them more sweet-scented, and how one may always have them.  
*Didymus.*
19. Concerning the lily.
20. Concerning lilies. *Anatolius.*
21. Concerning the iris. *Leontinus.*
22. Concerning the violet.
23. Concerning the planting of violets. *Tarentinus.*
24. Concerning the narcissus. *Tarentinus*, according to the Bodleian manuscript.
25. Concerning planting the narcissus: *Didymus.*
26. Concerning the planting of the crocus. *Florentinus.*
27. Concerning sampsuchum, costus, and balsam.
28. Concerning misodoulus, or basil. *Sotion.*
29. Concerning ivy.
30. Concerning the planting of ivy.

## BOOK XII.

1. Instruction relating to what is sown and planted every month, according to the climate of Constantinople.
2. Concerning making a garden. *Florentinus.*
3. Concerning land adapted to esculent plants. *Didymus.*
4. What manure is fit for esculents. *The same.*
5. How one may have esculents of every kind, in situations that have no water. *Vindaxionius.*
6. That a garden may be healthy and flourishing. *Democritus.*
7. That esculents may not be eaten by the fly, nor hurt by noxious animals, or birds. *Anatolius.*
8. That caterpillars may not infest herbs or trees. *Apu-leius.*

9. How the prasokourides may be destroyed. *Diophanes.*
10. What may be usefully raised near esculent plants.  
*Fronto.*
11. To injure the gardener. *Africanus.*
12. Concerning mallow, and its efficacy in different diseases. *Damogeron.*
13. Concerning the lettuce, and its medicinal qualities, and how it grows white and beautiful. *Florentinus.*
14. That the lettuce may produce parsley, and rocket, and basil, and such plants, from its root. *Didymus.*
15. Concerning beets, and how they may be made large.  
*Sotion.*
16. Concerning different esculents, and their medicinal powers. *Varro.*
17. Concerning cabbage, and its medicinal powers. *Paramus.*
18. Concerning asparagus. *Didymus.*
19. Concerning gourds and cucumbers, and their medicinal qualities; and how one may make each of them have no seed internally, and raise them early. *The Quintilii.*
20. Concerning melopepones. *Florentinus.*
21. Concerning the turnip and its seed. *The same.*
22. Concerning radishes. *The same.*
23. Concerning parsley. *The same.*
24. Concerning mint. *The same.*
25. Concerning garden and wild rue. *The same.*
26. Concerning rocket. *The same.*
27. Concerning cardamon. *The same.*
28. Concerning seris or troxima. *Didymus.*
29. Concerning leeks. *Sotion.*
30. Concerning garlic.
31. Concerning onions.
32. Concerning caucalis. *Paramus.*

33. Concerning pulegium. *Leontinus.*
34. Concerning anethum.
35. Concerning sisymbrium. *Damogeron.*
36. Concerning bulbs. *Anatolius.*
37. Concerning squill. *Berytius.*
38. Concerning lapathum. *Africanus.*
39. Concerning artichokes. *Varro.*
40. Concerning purslane. *Paxamus.*
41. The raising of mushrooms. *Tarentinus.*

## BOOK XIII.

1. Concerning locusts. *Democritus.*
2. Concerning the bruchus. *Didymus.*
3. Concerning weasels. *Africanus.*
4. Concerning domestic mice. *Paxamus.*
5. Concerning field mice. *Apuleius.*
6. Concerning the cat. *Sotion.*
7. Concerning moles. *Paxamus.*
8. Concerning serpents. *Florentinus.*
9. Concerning scorpions. *Diophanes.*
10. Concerning ants. *Paxamus.*
11. Concerning gnats. *Democritus.*
12. Concerning flies. *Berytius.*
13. Concerning bats. *Africanus.*
14. Concerning bugs. *Didymus.*
15. Against fleas. *Pamphilus.*
16. Concerning cantharides. *Zoroastres.*
17. For leeches. *Anatolius.*
18. Concerning frogs. *Africanus.*

## BOOK XIV.

1. Concerning pigeons. *Florentinus.*
2. That pigeons may not betake themselves to flight, but that they may be prompted to breed. *Didymus.*
3. That

3. That pigeons may settle, and that they may allure other pigeons to them. *The same.*
4. That a cat may not worry pigeons.
5. That a serpent may not get into the pigeon-house. *Democritus.*
6. Concerning the pigeon-house. *The Quintilii.*
7. Concerning domestic fowls. *Florentinus.*
8. How it is possible to produce chickens without a hen. *Democritus.*
9. Concerning the feeding of chickens. *Didymus.*
10. To make eggs bear an inscription. *Africanus.*
11. That hens may produce large eggs, and concerning the keeping of eggs. *Leontinus.*
12. That a hen may not catch cold. *The same.*
13. To make hens vertiginous. *Berytius.*
14. That hens may not prove abortive. *Pamphilus.*
15. That hens may not be hurt by a cat. *Africanus.*
16. Concerning cocks. *Florentinus.*
17. Concerning the various cures of hens. *Pazamus.*
18. Concerning peacocks. *Didymus.*
19. Concerning pheasants, and Numidian fowls, and partridges, and francolinos. *Varro.*
20. Concerning partridges. *Berytius.*
21. Concerning the taking of partridges, and of other birds. *Anatolius.*
22. Concerning geese. *The Quintilii.*
23. Concerning ducks. *Didymus.*
24. Concerning turtle-doves, and quails, and thrushes, and other small birds. *The same.*
25. Concerning jackdaws. *Leontinus.*
26. Concerning vultures. *Aristotle.*

## BOOK XV.

1. Concerning natural sympathy and antipathy. *Zoroastres.*
2. Con-



2. Concerning bees, and how they may be produced from an ox which is called *bougone*. *Florentinus*.
3. Concerning bees. *Didymus*.
4. That bees may not fly away. *The same*.
5. When it is proper to take bees. *The same*.
6. That the honey-taker may not be stung. *Paramus*.
7. Concerning honey, and the management of it. *Diophanes*.
8. That swarms of bees, or fields, or houses, or stalls of cattle, or workshops, may not be affected by enchantment. *Leontinus*.
9. To destroy drones. *Democritus*.
10. That a person may not be stung by wasps. *Paramus*.

## BOOK XVI.

1. Concerning horses. *Apsyrtus*.
2. Marks of horses. *Pelagonius*.
3. Concerning the curing of divers diseases. *Apsyrtus*.
4. Concerning a horse in a fever. *The same*.
5. Concerning the ophthalmia. *The same*.
6. Concerning the leukoma. *The same*.
7. Concerning the nerves. *The same*.
8. Concerning a flux of the belly. *The same*.
9. Concerning the strophus. *Hierocles*.
10. Concerning the pneumonia. *The same*.
11. Concerning a cough. *The same*.
12. Concerning an uncertain disease. *Theonnestus*.
13. Concerning dysuria. *The same*.
14. If a horse voids bloody urine. *The same*.
15. Concerning ulceration. *The same*.
16. Concerning inflammation. *The same*.
17. Malagma for the joints. *Pelagonius*.
18. Concerning the mange. *The same*.

19. Concerning a leech. *Apsyrtus*.
20. How you are to cure the bite of a scorpion, or of some other reptile. *Hippocrates*.
21. Concerning asses fit for admission. *Apsyrtus*.
22. Concerning camels. *Didymus*.

## BOOK XVII.

1. Concerning cows. *Florentinus*.
2. Concerning cows or heifers. *The same*.
3. Concerning bulls. *Didymus*.
4. That cows may not become weak. *Democritus*.
5. Concerning admission. *The Quintilii*.
6. Concerning the foreknowledge of the progeny. *Africanus*.
7. Concerning the œstrus, which is called *myops*. *Sotion*.
8. Concerning the rearing of calves. Some manuscripts ascribe this to *Didymus*, and some to *Sotion*.
9. That working cattle may not be tired. *Democritus*.
10. From what age cows are fit for breeding. *Varro*.
11. That cattle may not be infested by flies. *Africanus*.
12. To make oxen fat. *Sotion*.
13. Concerning the cure of cattle, and that they may not swallow any hard substance. *Paxamus*.
14. Concerning an unknown disease. *The same*.
15. Concerning the head-ache,
16. Concerning a diarrhœa,
17. Concerning indigestion.
18. Concerning the buprestes.
19. Concerning the colic.
20. Concerning an ox that has a fever. *Didymus*.
21. Concerning an ox that has a cough.
22. Concerning suppuration.
23. Concerning lameness. *Florentinus*.

- 24. Concerning the mange.
- 25. Concerning bile.
- 26. Concerning a chill.
- 27. Concerning worms.
- 28. Concerning the loathing of provender.
- 29. Concerning watery pustules.

## BOOK XVIII.

- 1. Concerning the choice of sheep, and the approbation of the males and females. *Florentinus.*
- 2. Concerning the care and the preservation of sheep. *The same.*
- 3. Concerning admission and yeanning. *Didymus.*
- 4. Concerning sheep, that they may follow the shepherds. *Africanus.*
- 5. That a ram may not be pugnacious. *The same.*
- 6. When a sheep is with young, that you may know what colour the fœtus has. *Democritus.*
- 7. That lambs may not be unhealthy. *Didymus.*
- 8. At what time and in what manner you ought to shear your sheep. *Didymus.*
- 9. Concerning she-goats and he-goats. *Florentinus.*
- 10. That goats may produce much milk. *The same.*
- 11. That sheep and goats may not be affected by pestilential disease. *The Quintilius.*
- 12. Concerning milk, and that cattle may produce much milk. *Africanus.*
- 13. Concerning the cure of sheep. *Leontinus.*
- 14. Concerning the taking of wolves. *Diophanes.*
- 15. Concerning the mange. *Didymus.*
- 16. Concerning the ptheiriæsis. *The same.*
- 17. Concerning different diseases. *Anatolius.*

18. Concerning herds of goats. *Berytius.*
19. Concerning the making of cheese. *The same.*
20. Concerning the proving of milk. *The same.*
21. Compendious preparation of melca. *Pazamus.*

BOOK XIX.

1. Concerning dogs. *Varro.*
2. Another concerning dogs. *Fronto.*
3. Concerning the cure of dogs. *Theomnestus.*
4. Concerning hares. *Democritus.*
5. Concerning stags. *Xenophon.*
6. Concerning swine. *Florentinus.*
7. Concerning the cure of swine. *Didymus.*
8. Concerning wild swine. *Democritus.*
9. Concerning the salting of all kinds of meat. *Didymus.*

BOOK XX.

1. Concerning the propagating of fish. *Florentinus.*
2. To bring fish to one place. *Oppian.*
3. To take river-fish. *Didymus.*
4. To bring all kinds of fish into one place. *Democritus.*
5. For taking all kinds of fish.
6. Concerning the catching of fish. *Tarentinus.*
7. Baits for fish. *The same.*
8. Composition of bait.
9. Another composition for large coracini only, an excellent bait.
10. For river-fish, which Oppian used.
11. Bait to which fish promptly come.

12. For small river-fish.
13. For the fish called *porci*.
14. For eels.
15. Bait for sea-mulletts.
16. Another excellent bait, and fit for no other but the best mullets.
17. Bait for sea-mulletts.
18. A convenient preparation that fish may come to the same spot.
19. Bait for surmulletts and large scari, that they may be attracted by it, to which none of the small fish make their approach on account of the unsavouriness of the bait; but the composition is naturally of an attractive quality.
20. For all large sea-fish, as glami, orphi, and fish of this kind.
21. For *murænæ*.
22. For polypodes and *sepiæ*.
23. For other kinds of fish.
24. Bait for all fish in every season.
25. For small fish, from a reed.
26. Universal baits.
27. For all small fish.
28. Concerning weels.
29. Another concerning weels.
30. For sea-mulletts.
31. For *scorpii* only.
32. For sea-phôgri.
33. For raphides only.
34. For tunnies only.
35. For *sararides*.
36. For the ray.

37. Another for the same purpose.
38. For salpæ,
39. For gl<sup>us</sup>anei.
40. For trachuri,
41. For mullets, &c.
42. For polypodes.
43. For sepia only.
44. For locustæ.
45. For melanuri.
46. Composition of garum.





# ΓΕΩΠΟΝΙΚΑ.

---

## AGRICULTURAL PURSUITS.

---

### B O O K X.

#### HYPOTHESIS.

These things are in this Book, being indeed the Tenth, relating to the choice Precepts of Agriculture, and comprising the method concerning making a garden, and the enjoyment and pleasure<sup>a</sup> arising from it, and when it is proper that every tree should be planted, and what trees become more useful when grafted, and which are more useful when inoculated.

#### I.—CONCERNING A GARDEN.

A PERSON who wishes to have a garden ought to choose a situation that is fit, if indeed it can be done, within the precincts;<sup>b</sup> but if not, quite near, that pleasure may not only arise from the

VOL. II.

B

sight

<sup>a</sup> Luxury, in the Greek.

<sup>b</sup> “Of the villa,” seems as if omitted after this word.



sight to the persons within doors, but that the circumambient air also, impregnated by what exhales from the plants, may render the possessor's house salubrious. But you are to throw up a wall<sup>c</sup> around it, or some other fence, with due care: and let not the plants be set without arrangement, or promiscuously, for diversity of plants producē elegance; but let all the plants be set apart according to their kind, that the least may not be overpowered by the greatest, or that they may not be deprived of the benefit of nutrition: and let the intervals between all the trees be filled with roses, and lilies, and violets, and the crocus, which are very pleasant to the sight and to the smell; and they are very useful, and profitable, and they are of advantage to the bees. \* You are also to take the plants from trees that are in full vigour and unhurt: and it is proper to know that the plants from seed are generally the worst of all plants; and that suckers<sup>d</sup> are more eligible; and that plants that are grafted are better than these, not only for producing good fruit, but plenty, as well as a speedy crop of it.

## II.

<sup>c</sup> Περιβλητιον δι' αυτου θειγγω. The last word sometimes signifies a wall, sometimes a hedge.

<sup>d</sup> Μεσχυματα. The word, when duly considered, carries great force of expression.

### III.—AT WHAT TIME IT IS NECESSARY TO PLANT TREES.

THE autumnal season is the best adapted for planting, and especially in dry situations, for the plants are watered during all the winter. It is proper then, as soon as the showers fall, immediately to plant after the setting of the Pleiades to the winter solstice, that is, from the seventh<sup>e</sup> or eleventh of the month of November, to the twentieth of the month of December. All the authors who have written on agricultural subjects have, to a man, prudently chosen the season of the autumn as well adapted, and the Quintilii say so. But you are to plant in the spring such trees as you have not previously planted in the autumn: and I learning this from correct experience, planting indeed at this season many vineyards in the Maratonyme<sup>f</sup> villa, and in other grounds of mine in the neighbourhood, have reaped a consummate profit. Having also planted a great many trees that produce fruit<sup>g</sup> with

B 2

hard

\* Columella fixes the setting of the Pleiades on the eighth of November.

<sup>f</sup> From this passage, this chapter ought to be ascribed to Cassianus, and not to Florentinus. Lib. v. c. 6.

<sup>g</sup> *Angedova*, fruit which had a hard shell, as nuts, &c.

hard integuments, and other fruit, in the autumn, I acknowledge my obligation to the season: all therefore who are in our part of the country, seeing my good fortune from this method, no longer make their plantation according to the old custom in the spring only, but rather in the autumn, following my instruction. But while experience seems sufficient, I think it necessary likewise to give a reason why I rather practise the mode of planting in the autumn. Deign then to be informed, that nature cannot at the same time do two things that are incompatible; but it necessarily follows that while it is employed about the one, it must neglect the other: as in the instance of planting; at one time indeed it administers aid to the upper parts of the trees, at another it nourishes the parts beneath, I mean the roots. It is then evident that, as it has been used to cherish the upper parts of plants in the spring, trees therefore then blossom and bud: but it is quite the contrary in the autumn; for indeed the higher parts are no longer cherished, but they cast off their leaves, and the roots are fostered by nature. It is therefore necessary to choose that season for planting in which nature is employed about the roots. It is proper indeed to plant all trees, as well as the  
vine,

vine, when the moon is under the earth : and if a tree is planted when the moon increases, it will grow very much ; but if when in the wane, it will be short indeed, but it will be the stronger.

### III.—WHAT TREES YOU ARE TO PLANT FROM SEED, AND WHAT FROM SUCKERS, AND WHAT FROM TRUNCHEONS, AND WHAT FROM LAYERS.

THE methods of planting trees are various : for some trees are usefully raised from seed, and others from shoots called suckers ; and some from truncheons, and some from layers.<sup>b</sup> It is therefore necessary to explain the methods whereby every tree ought to be planted. From the seed then are indeed raised, the pistacia, the small nut, the almond, the chesnut, the duracinum,<sup>1</sup> the damson, the strobilus,<sup>k</sup> the palm, the cypress, the bay, the apple-tree, the maple, the fir, the pine ; but these, when transplanted, will be better. But from young shoots or suckers are planted apple-trees, and such things as the cherry and the zizyphus, the small nut, the small bay, the myrtle, the medlar. Shoots, or what are called suckers,

B 3

are

<sup>b</sup> Branches, in the Greek.

<sup>1</sup> A peach thus called. See c. 13.

<sup>k</sup> Supposed to be a species of pine.

are those that are united to the trees, and they are taken from them with a considerable portion of root: but the shoots and the suckers ought to be transplanted. But these are planted from truncheons and layers: the almond, the pear, the mulberry, the citron, the apple, the olive, the quince, the black and white poplar, the ivy-tree, the zizyphus, the myrtle, the chesnut; and these, when transplanted, will be better. The trees also that may be planted from suckers, and from layers and truncheons, are these: the fig, the mulberry, the citron, the pomegranate, the olive, the sycamore, the white poplar, the pricked myrtle, the quince. But these are planted from layers and truncheons only, for they cannot be propagated from suckers, because they throw none from the roots: the vine, the willow, the box-tree, the cytissus. Those that may be raised both from seed and suckers are these: the apricot, the damson, the almond, the palm, the pistacia, the plane tree, the bay.

#### IV.—CONCERNING THE PLANTING OF PALM-TREES.

HAVING dug a trench two cubits deep, and of the same breadth or more, fill it in part with  
mould

mould mixed with goats dung, leaving a depth of half a cubit; then setting the seed in the middle, and having the pointed end of it toward the east; lay on mould mixed with manure and salt, and water it every day until it shoots. Some indeed transplant it, and some let it remain in its place; and as it likes a soil impregnated with salt, it is proper to dig around it every year, and to throw in some salt; for thus the plants will speedily grow to a good size. They also flourish with more vigour when manured with the lees of old wine. But it is not proper immediately to sow the seeds of palms in the ground, but at the bottom of a jar, and then to transplant them. The palm-tree also betrays affection, and that to a degree of ardour, for another palm, as Florentinus says in his *Georgics*; and it will not desist from shewing it, until the male plant with which it is enamoured consoles it: for you may see the tree as if in a state of suffering, and neither standing firm, nor bearing fruit. This escapes not the notice of the cultivator, but he is convinced that it betrays affection, and that it is mutual, but he knows not the object; he therefore touches many palms, and returns to the affectionate tree, and touches it with his hand, and thus seems to relieve its passion. With which

male plant indeed it is captivated, it exhibits by a certain sign of passion and of demonstration, as one may express himself, for it points to it, and directing its roots towards it, it does, as it were, with eagerness embrace it. Relief is therefore administered to the affectionate female plant, by the cultivator's frequently touching the male, and by applying his hands to the impassioned female; most effectually, if he takes the flower from<sup>1</sup> the bearing branch of the male, and places it on the top of the female; for thus he mitigates its passion, and the tree, thus invigorated, will for the future produce very good fruit.

**V.—CONCERNING THE METHOD BY WHICH THE  
FRUIT OF THE PALM-TREES FLOURISHES.**

THEIR fruit indeed thrives, when the empty hulls, which some call integuments, are taken when in flower and dried, and are hung on the stems, as the wild figs are on fig-trees.

**VI.—CONCERNING PALM-SHOOTS, AND THE USE  
OF THEM.**

PALM-TREES flourish and grow high, when the lees of old wine are percolated and poured on  
the

<sup>1</sup> Ἀποτῆς σκαθῆς.

the roots; and salt thrown on them is useful. But that the shoots may be white and fit for the making<sup>a</sup> of baskets and panniers, let us gather them green from the branches; and let us lay them during four days under cover; and let us afterwards suffer them to be exposed to the dew, and to be dried in the sun until they become white.

VII.—CONCERNING THE SEASON FOR PLANTING THE CITRON, AND THE CARE OF IT; AND HOW CITRONS ARE TO BECOME RED.

You are to plant the citron from autumn to the vernal equinox: and it likes plenty of moisture; and this above all trees is aided by a southern aspect, and it is hurt by the north wind. But when the crop of fruit is heavy, it is proper to gather a great part of it, and to leave few, for thus they are better nourished. But it is necessary to plant these against walls, that they may be defended from the north: and they are covered during the winter with mats, and very commonly with the haulm of gourds, for it has a certain natural resisting power to keep them unhurt in the cold. Having moreover burnt the more substantial and the thick shoots of the gourds, it is proper

<sup>a</sup> Weaving, in the original.



proper to scatter the ashes over the roots of the citron. But if the fruit of the citron is set in an earthen or in a glass vessel, before it is grown to perfection, it will in growing be formed according to the vessel, and it will grow in proportion to the size of the vessel; for the fruit seems to have a tendency to this; but it is necessary to afford the vessel vent-holes. It is also proper to know, that the citron, when inoculated, is steril; it is therefore proper to graft it in the wood in the same manner as you graft vines. But if you wish to make citrons black, graft a branch of an apple-tree with the citron, and *vice versa*; and the apple may become so, the citron-tree having been thus grafted, and *vice versa*. If you also cover the fruit with well-wrought gypsum, you will preserve it unhurt all the year. This plant, if it is touched by the frost, being naturally tender, when<sup>a</sup> frost-bitten perishes. Some of the rich and luxurious indeed plant their citrons against the wall in houses<sup>b</sup> facing the sun, and they give them plenty of water: and in the summer they leave the houses uncovered, affording the plants the benefit of the sun; and when the winter approaches, they cover the plants. But if you wish to make citrons red, graft them on the mulberry,

<sup>a</sup> Καυμωσι; literally, burnt.

<sup>b</sup> Τὰς σοάς, under porticos.

mulberry, and *vice versa*, and the citrons become red; and the tree will produce either of the kinds of fruit. The citron is also grafted on the pomegranate.

#### VIII.—ANOTHER CONCERNING THE PLANTING OF THE CITRON.

BUT some plant citrons not only from truncheons, but from layers also: a branch having been bent, two parts towards the extremity are fixed in a trench, and they are covered with earth; and they throw out a shoot, as one may say, from the incurvated branch. Some likewise plant the short truncheons of citron plants, that cannot be bent, inverted, with the thick end upward, and fixing the small end in the ground; and they throw in the ashes of the refuse of cucumbers along with them.

#### IX.—TO MAKE THE CITRON BEAR THE REPRESENTATION OF ANY BIRD, OR TO IMITATE THE FACE OF A MAN, OR OF SOME OTHER ANIMAL.

You will make the fruit already mentioned represent the form of the face of a man, or of  
some

some other animal, in this manner: having covered it<sup>p</sup> with gypsum or with clay, and having left it to be dried; and having made it into two parts, the one anterior, the other posterior, so that they may fit when they are dried; burn them as you do earthen ware. When the fruit comes to half its growth, set on the moulds, and secure them by carefully tying them, that they may not be parted by the growth of the fruit, whether it is a pear, or an apple, or a pomegranate, or a citron, and it will receive the form; and in short, fruit assumes the resemblance of animals, if<sup>q</sup> a person lays it in carved moulds, and suffers it to grow.

#### X.—CONCERNING PRESERVING AND LAYING UP CITRONS.

If you carefully cover the fruit with well-wrought gypsum, you will keep it unhurt and untainted all the year; and you must know that citrons, when covered with barley, do not putrify.

#### XI.

<sup>p</sup> The face.

<sup>q</sup> In the Greek it runs thus: "Wherefore let a person, laying it in carved moulds, suffer it to grow."

# **XI.—CONCERNING THE PLANTING OF PISTACIA-TREES.**

TAKE the seed without shelling it, that is, having all the parts whole, and plant it in' the usual way. Didymus says in his Georgics, that the pistacia is grafted on the almond-tree.

# **XII.—ANOTHER CONCERNING THE PLANTING OF PISTACIA-TREES.**

PISTACIA-TREES are <sup>planted</sup> sown about the calends of April; the male and female having been naturally wedded, the male having his back to the western breeze, for thus they will produce perfect fruit. They are also grafted in the same season on their own kind, or on the terebinthus, and I believe on almond-trees. Paxamus says that you are to make trenches in places well exposed to the sun, well wrought; and to take the suckers of trees that are perfect and young, and to tie them together; and to set them in the trench the second day of the moon's age; and to confine

\* "In a way already mentioned," in the Greek. The passage is supposed to refer to a method which had been prescribed in some part of the works of Diophanes.

confine them from the ground to the branches; and to manure the trench; and to lay on earth, and to dig around them; and to take care that they are watered at the expiration of eight days, and that they are tied again on those days. But when the trees' are three years old, you are to dig the trench well near the roots, and to manure it, and to make the stem lie lower; and to lay on mould, that when the tree becomes large, and the wind blows powerfully, it may not fall.

### XIII.—CONCERNING THE PLANTING OF THE DURACINA<sup>1</sup>, AND THE CARE OF THEM.

THE duracina like wet situations, or such as are continually watered, for thus the fruit grows larger. Some indeed gather many of the peaches, and they leave but few on the tree; for they will thus be larger, the nourishment being conveyed to these few. The plants also increase, if we immediately set the stone after eating the fruit, leaving some part of the fruit on the stone: as we then know that the duracinum soon grows old, we ought to graft it on the damson, or on the bitter

<sup>1</sup> Stems, in the Greek.

<sup>2</sup> Δυρακίνα. Gruterus says that these peaches were so called from Dora, an island in Persia.

bitter almond, or on the barbilus. The tree which grows from the stone of the peach is indeed, by way of eminence, called the barbilus.

#### XIV.—TO MAKE PEACHES GROW WITH MARKS ON THEM.

WE shall make a peach have inscribed marks in this manner: when you have eaten the fruit of the duracinum, macerate the stone during two or three days, and open it gently; and taking the kernel, that is found in the stone, inscribe on the skin of it with a brazen stylus what you please, not deep; then wrapping it in papyrus, plant it; for whatever you have inscribed on the kernel you will find in the fruit. Some indeed do this on the almond.

#### XV.—TO MAKE THE DURACINA RED.

YOU will make the duracina red by setting roses under the plants. You will also make the fruit red another way; for if having covered the stone of the peach you take it up and open it, after seven days (for it opens spontaneously in that time), and you pour cinnabar<sup>a</sup> into it, and set

<sup>a</sup> Dioscorides says that the cinnabar of the Greeks was brought from Africa; Matth. v. 69.

set it, and take care of it, you will have the fruit red. It is equally practicable if you pour in any other colour, and you will make the fruit assume that colour.

#### XVI.—TO RAISE PEACHES WITHOUT STONES.

HAVING perforated the stem in the middle, and having penetrated the pith, fix in a piece of willow, or of the cherry-tree.

#### XVII.—CONCERNING THE GRAFTING OF PEACHES.

THE duracinum is grafted on the almond, the damson, and on the plane-tree, from which circumstance the fruit becomes red.

#### XVIII.—CONCERNING THE SEASON FOR PLANTING APPLE-TREES, AND THE CARE OF THEM.

You are to plant apple-trees at two seasons of the year, in the spring and in the autumn; but it is better to plant in the autumn in dry situations after the first showers. Apple-trees indeed like cool and moist situations, and a black soil: and they will not be hurt by worms when the squill is planted

planted about them. You will also cure a tree infested by worms, by pouring hogs dung, moistened with urine, around the roots; for the apple-tree is very partial to urine, and you ought assiduously to apply it. But some add goats dung to the urine, and they pour the lees of old wine on the roots, thus rendering the fruit sweeter. You will also cure an apple-tree with asses dung, rendered soluble with water; watering it during six days at sun-set, at certain intervals, until it shoots. But if you wish it to bear much fruit, and not to shed it, cut off a wide piece of a leaden pipe, and tie or fix it around the stem a foot from the ground; and when the fruit begins to come to perfection, remove the cincture; and let this be done every year, and the tree will flourish. But that the fruit may not rot on the tree, and that the caterpillar may not touch it, smear the stem around with the gall of a green lizard. It is also necessary to take the most generous plants of the apple-trees that are rooted, and to set them in the trenches, the extremity only being left above ground; and you are to smear the roots of the plant, before setting it, with bull's gall, for this plant is very soon hurt by the worms. It is also proper to remove the worms that are troublesome with a brass spike, and to divide the bark



until the noxious animal is found; and you are to cover the wounded places with cow-dung.

### XIX.—TO MAKE APPLES RED.

LET the tree be watered with urine, and the fruit grows red. Some indeed make the fruit of apple-trees red in this manner: having fixed stakes in the ground, and bending the branches having fruit on them, they tie them regularly to the stakes; and they fill trenches or vessels near them with water, contriving that the rays of the sun falling on the water at noon, and raising a warm vapour, and falling on the fruit by reflection, may make it of a good colour and ruddy. Some also set roses under the plants, to make the fruit red.

### XX.—CONCERNING GRAFTING APPLE-TREES.

THE apple-tree is grafted on every kind of wild pear, and on the quince; and the most beautiful fruit grows from the quince-trees, called by the Athenians the sweet-apple<sup>v</sup>. Apples are also grafted on the plane-tree, on which the fruit grows red: and Didymus says in his Georgics, that

<sup>v</sup> Honey-apples, in the Greek.

that apples are properly grafted on damsons, and that an apple grafted on the citron bears almost all the year.

## XXI.—CONCERNING THE KEEPING OF APPLES.

APPLES, when gathered in a state of perfection, keep during a long time; but it is proper to gather them carefully with the hand, that they may not be bruised: and it is proper to wrap them in sea weed, that is, in sea moss, so that they may be thoroughly covered, and to lay them in fresh pots, and to lay sea weed between the apples, that they may not touch each other, then to stop the pots. It is also proper to place them in an upper room, and one that is cool, free from smoke, and from all unsavoury smell. But if there is no sea weed, you are to lay every apple by itself in small pots, that have not been burnt, and you are to lay them up when you have stopped them. Some indeed, having covered each apple with potters clay, dry it, and lay it up. Apples will be preserved, having their genuine flavour, when the leaves of the walnut-tree are strewn under them; for they contribute much to the goodness of their colour, and to the ex-

c 2

cellence

▪ Earthen pots, that had not been burnt.

cellence of their flavour. But you will do better, if, having wrapped each apple in walnut leaves, you lay it up. You may keep apples, if you lay them in pots that are internally covered with wax, stopping them with care. Apples also laid in barley keep sound. You will also keep apples thus: take an earthen vessel, that is not pitched, with a hole in the bottom of it; fill it with wholesome apples, that have been hand-gathered, not grown old; and having well covered the vessel with rock<sup>\*</sup> asparagus, or with something else, hang it on any tree, and let it remain during all the winter, and the fruit will remain as it was put in: and I have learned this from experience. Apples are also thus preserved: wrap each apple in dry fig-leaves, then cover them with white potters clay, and lay them up when dried in the sun, and the apples will remain as they were put in. Apples thrown into must will keep, being preserved by the lees, and they will preserve the wine and make it have a sweeter flavour, to every body's astonishment. Being also laid in a new pot, and the pot being put into a wine-cask, so that it may swim, and the cask being stopped, they will be quite fresh, and the wine well-flavoured. They are also laid in baskets with clean locks

\* Called rock, or wild asparagus. Dioscorides, lib.ii. c. 118.

locks of wool, and are preserved: and the winter apples are best kept in seed<sup>7</sup>, in which, as we have already taken notice, grapes are kept. Smear the extremities of the apples with the juice of green satyrion<sup>8</sup>, and they do not decay.

## XXII.—CONCERNING THE PLANTING OF PEARS, AND THE CARE OF THEM.

HAVING first gathered up all the stones from the trenches, set the plant; and having covered it with sifted mould, water it: but if the tree has been previously planted, uncover it to the bottom of the roots, pick up all the stones, and having sifted the mould that was dug up, throw it in with manure; and having laid it on, water it. The pear indeed likes cool and wet situations; and it is propagated not only from quicksets, but from suckers also that are taken up. But if you are going to set quicksets, let them be three years, by no means less than two years old. But some make truncheons from the most eligible parts of the stem, and plant them; and some taking the most

c. 3

thriving

<sup>7</sup> Pliny says they were kept in the seed of millet. See Palladius, iii. 25.

<sup>8</sup> Two species of this plant grow upon the Alps, and one near Verona. It is described by Matthioli, iii. 126.

thriving branches, that is, the most generous, from the upper part of the trees, plant them, and they succeed.

### XXIII.—ANOTHER CONCERNING THE PLANTING OF PEARS.

THE pear likes cool, and wet, and fertile countries: but it consists of many species; and it therefore requires various modes of planting; for it is certainly proper to plant the large kinds, that are long and round, which ripen their fruit on the tree, earlier; but you are to begin to plant the other kinds from the middle of the winter till the middle of the spring. They are also planted in situations that have good air, and inclined to the east or to the north; and they are propagated not only from suckers, but from quicksets<sup>a</sup>; and let the quicksets be not less than two years old; and cover the roots with earth mixed with dung. Some indeed, acting with more judgment, graft rather than plant them; and transplanting wild pear-trees with roots, or some other plants of the kind, from healthy situations, they set them in the manner already mentioned; then, when the plants

<sup>a</sup> Plants having their own roots, and not taken from a tree as suckers and layers.

plants have taken root, they graft what kind of pears they please on them. But if you wish to render the fruit sweet, and the tree to bear more abundantly; having perforated the stem to the ground, drive in a piece of oak or of beach.<sup>b</sup> You will cure it if unhealthy, when it blossoms, by pouring the lees of old wine on the roots, and watering it during fifteen days; then cover the roots, and if it is not unhealthy, you will render the fruit of a sweeter flavour by pouring the lees of wine on the roots: and the fruit will not be hurt by worms, if the roots, when they are planted, are smeared with bull's gall.

#### XXIV.—CONCERNING THE GRAFTING OF PEARS.

THE pear is grafted on the pomegranate, and on the quince, and on the almond, and on the terebinthus, and on the mulberry; and when grafted on the mulberry, it produces red fruit.

#### XXV.—CONCERNING THE KEEPING OF PEARS.

HAVING covered the pedicles of the pears with pitch, hang them up. Others indeed throw the pears into a new earthen vessel, and pour sapa

431

C 4

OR

<sup>b</sup> In some copies the Greek is *φύρα*, i. e. of the plant.

must, or wine on them, so that the vessel may be filled, and they lay it by. Others have preserved their pears by laying them in saw-dust. But some lay them in dry walnut leaves. Others, having poured some sapa and wine, and must, into a new earthen vessel having a little salt, put in the pears, and having stopped the vessel they lay it by. Others likewise lay them in<sup>c</sup> the lees of sweet wine, at some distance from each other.

**XXVI.—CONCERNING THE PLANTING OF QUINCES.**

QUINCES are planted in the same season and manner prescribed for cherries.

**XXVII.—TO MAKE THE QUINCE ASSUME ANY APPEARANCE.**

QUINCES assume the appearance of animals, if you let them grow in<sup>d</sup> moulds.

**XXVIII.—CONCERNING THE KEEPING OF QUINCES.**

QUINCES put in must keep, being preserved by the lees; and they will preserve the wine, and they

<sup>c</sup> In the kernels, in the Greek.

<sup>d</sup> c. 9.

they will make it better flavoured, to the admiration of every one: and being laid in a new earthen pot, and the pot being laid in a wine-cask, so that it may swim, the cask being stopped, the quinces will be fresh, and the wine well-flavoured; and they are laid in baskets with\* clean wool. Quinces are likewise kept a very long time, when covered with saw-dust; for, being dried by the saw-dust, they are improved. They are also well kept when laid in straw. But you are not to keep these in the house where other kinds of fruit are laid; for lying near them, they hurt them by their acidity and smell, and especially the grapes. Some indeed, having wrapped the quinces in leaves, cover them round with white clay carefully mixed with hair, or with potters clay; and having then dried them in the sun, they lay them up: and when use requires it, having removed the clay, they find the quinces as they were set in. It is also proper to do the same with regard to apples. Quinces are also kept in barley, as well as in must.

## XXIX.

\* With clean locks of wool, in the Greek.



**XXIX.—CONCERNING THE PLANTING OF POMEGRANATES, AND THE CURE OF THEM, AND EVERY DUE CARE OF THEM.**

THE pomegranate loves a warm air, and it is planted in dry situations: and it is necessary, when you plant them,<sup>f</sup> to set the squill along with them. They will also remain green on the tree till the spring, if you twist their stalks, that is, turn them around once or twice, when they are come to maturity, and lay dry gourds and turnips round each of them, that they may not be wetted, and that they may not be eaten by the birds. You will also cure such as are unhealthy, by covering the trunk near the roots with weeds thrown up by the sea, and by assiduously watering them. Diophanes says in his Georgics, that pomegranates grow red, if the roots of the trees are watered with a lixivium from the baths. Democritus also says, that the pomegranate and myrtle betray an affection for each other, and that, when planted near each other, they will bear plentifully, and that their roots become mutually implicated<sup>g</sup>, although they may not be very near.

**XXX.**

<sup>f</sup> The transition, as in the Greek.

<sup>g</sup> *i. e.* entangled.

### XXX.—THAT POMEGRANATES MAY NOT CRACK.

WHEN you plant them, first throw flints into the trench; but if they be already planted, set some squills near them; for these, from contrariety of affection, prevent them from cracking. If they are likewise set inverted, the fruit does not crack.

### XXXI.—TO MAKE THE POMEGRANATE GROW WITHOUT KERNELS.

If you take out a good part of the pith, as<sup>b</sup> in relation to the grape, and cover the divided wood with mould, and after some time cut off the upper part of the plant, which has shot, it will bear fruit without kernels.

### XXXII.—A BRANCH OF THE POMEGRANATE KEEPS OFF VENEMOUS BEASTS.

THEY say that a branch of the pomegranate is inimical to venemous animals, and they deem it proper on this account to lay it in stacks of straw for security.

### XXXIII.

<sup>b</sup> Lib. iv. 7.

**XXXIII.—THAT POMEGRANATES MAY GROW  
RED.**

IF you wish to make the fruit of the pomegranate red, irrigate the plant with water, having mixed with it some lixivium out of the bath.

**XXXIV.—HOW TO MAKE A POMEGRANATE  
THAT IS SOUR, SWEET.**

HAVING dug around the roots of the tree, cover them with hogs faeces ; and having laid on the mould, irrigate them with urine. But you will find something more finished in relation to this in<sup>1</sup> my third book of Georgics, in the twenty-seventh chapter.

**XXXV.—THAT THE POMEGRANATE-TREE MAY  
PRODUCE MUCH FRUIT.**

HAVING well pounded some purslane and spurge, smear the stem of the tree.

**XXXVI.—HAVING GATHERED A POMEGRANATE FROM THE TREE, TO ENUMERATE THE  
KERNELS.**

HAVING opened a pomegranate, enumerate the kernels ; and as many as you find in one, so many

<sup>1</sup> In the third book of the Georgics of Paxamus.

many may each of the others contain; but to judge that a pomegranate is small or large, one cannot from the great or small number of the kernels, but from the greater or less size of them.

### XXXVII.—CONCERNING THE GRAFTING OF THE POMEGRANATE.

THE pomegranate is inoculated in a different way from other trees. Having chosen a flexible stem that may be bent down to the ground, they inoculate it as they do other trees, and they likewise secure it with bandages; they then bend it down to the ground, not touching the inoculated part, but that which is underneath; they besprinkle it with amurca, they cover it with earth, rendering it very secure, that it may not recoil, until the shoot<sup>\*</sup> comes out. It is indeed proper to know that we take shoots from other trees before they sprout; but with regard to the pomegranate, even after it has sprouted: and as it has been before mentioned<sup>1</sup>, the pomegranate betrays great affection for the myrtle, as Didymus informs us in his Georgics; where he says, if the pomegranate is grafted on the myrtle, or the

<sup>\*</sup> ἔρπον.

<sup>1</sup> Chap. xxix.

the myrtle on the pomegranate, it will produce much more fruit. Wherefore the pomegranate is judiciously grafted on the myrtle, and on the willow, and the citron is grafted on the pomegranate, as Didymus says in his Georgics.

### XXXVIII.—CONCERNING KEEPING AND LAYING UP AND PRESERVING POMEGRANATES.

It is proper to gather the pomegranates which you are to keep during the winter, with caution, that you may not bruise them, for this affords a beginning to putrefaction. Having then gathered them without the least injury, and having dipped the pedicles in boiled pitch, hang them up. Others dip the pomegranates, and having afterwards cooled them, hang them up. Wine is also prepared from pomegranates, and it is the most beautiful beverage. Others likewise, having secured each pomegranate in its shoot, and having tied them with strings, and having carefully smeared them around with gypsum, that the swollen fruit may not burst, permit them to remain on the tree. This may be also done with regard to apples. Others indeed lay them in oak saw-dust, previously pouring vinegar on it. Some also having heated sea-water, or having boiled some brine, dip the pomegranates in this; and having afterwards

afterwards dried them in the sun, so hang them up; and when they are going to use them, they macerate them in water two days before. Others likewise suffer the pomegranates to remain for some time on the tree, and they confine each in a new earthen pot; and having stopped and secured them, so that they may not beat against and be hurt by the stems, nor one by another, they will have them fresh all the year. Pomegranates will keep during a long time, being dipped in clean hot water, and immediately taken out. You are also to lay pomegranates in dry sand, or in a quantity of wheat in the shade, until they become wrinkled.

#### XXXIX.—CONCERNING THE PLANTING OF DAMSONS.

THE damson also loves a dry soil and a warm air; and it is planted in the same manner as the barbilus; and it is grafted in the same season and on the same days as the barbilus, but on trees of the same kind, and on the apple.

#### XL.—CONCERNING THE KEEPING OF DAMSONS.

SOME indeed, putting them in vessels, pour new wine on them, and some pour on must; and having

having filled and stopped the vessels, they leave them.

#### **XLI.—CONCERNING THE PLANTING OF CHERRIES.**

CHERRY-TREES are planted and grafted in the same manner as apples and pears; but this plant loves cool and wet situations; it is also partial to grafting; and the cherry-tree will not produce good and sweet fruit, unless it is grafted. If the black grape is likewise grafted on the cherry-tree, it will bear grapes in the spring.

#### **XLII.—CONCERNING THE KEEPING OF CHERRIES.**

CHERRIES being gathered from the tree before the rising of the sun, and being thrown into a vessel, some thymbra<sup>m</sup> having been previously laid at the bottom, then some cherries, and then some thymbra, and some sweet oxymel being poured on them, are kept: and they are also kept on the leaves of the sweet calamus.

#### **XLIII.**

<sup>m</sup> Called *satureia* in Latin; Matth. lib. iii. c. 38.

**XLIII.—CONCERNING THE PLANTING OF THE  
JUJUBE-TREE.**

THE jujube-tree is planted from shoots taken from the middle of the tree, as Didymus says in his Georgics.

**XLIV.—CONCERNING KEEPING THE FRUIT OF  
THE JUJUBE.**

THE fruit of the jujube is kept, being thrown into oenomei, the leaves of calamus being laid under and over it.

**XLV.—CONCERNING THE SEASON OF PLANTING  
FIGS, AND THE CARE OF THEM.**

FIGS are planted at two seasons of the year, in the spring and in the autumn: but it is better to plant the fig in the spring above all plants, for the plant being more delicate is very soon hurt by the frost and by the wind; you must therefore set it after the frosts in the spring. I indeed have planted fig-trees throughout the month of July, and have met with great success; and having transplanted and watered them, I had large trees

VOL. II.

D

that



that bore fruit from them; and from constant experience I have persevered to plant, not only in the spring, but in the month of July likewise. It is indeed necessary to plant figs in warm situations and in rich earth, but not watered, for much water destroys the natural goodness of the figs, and it makes them easily rot. It is also planted in another way; for if any one, having macerated the figs, lays them in a rope, and having planted, waters them, many plants will grow, which it is proper to transplant. But if any one sets the rooted plants of the fig-tree, it is proper to plant them with the squill. Some, having besprinkled the plant with brine, set it; but it is better, if any one is going to plant cuttings, to smear them with cow-dung. Others throw in some quick-lime after the plant, and this is attended with success. But it is proper to know that the fig-tree, when grown old, is more fruitful. Some throw in ashes, and some throw sinople\* on the roots: but if you wish the fig-tree not to run too high, plant the cutting inverted\*. The fig is also successfully raised from seed.

## XLVI.

\* By the Romans called *rubrica*; Matth. v. 71.

° Pliny makes the same observation, lib. xvii. 14.

**XLVI.—THAT FIG-TREES THAT ARE PLANTED  
MAY BE FREE FROM WORMS.**

THE fig-trees will not produce worms, if, when you are going to plant, you fix the shoot in a squill; and you will destroy those that are in them, if you sprinkle lime over the roots, and into the hollow parts of the trunk.

**XLVII.—TO MAKE FIGS HAVE CHARACTERS.**

INSCRIBE what you please on the eye of the fig-tree which you are going to inoculate, and the figs will produce characters.

**XLVIII.—THAT THE FIG-TREE MAY NOT CAST  
ITS FRUIT.**

THE fig-tree does not cast its fruit, if you take some mulberries and rub the trunk of it with them. It also does not cast its fruit, if you apply salt or sea weeds to the roots of it, or rub the trunk with rubrica, when the moon is at the full, or suspend sour<sup>p</sup> figs on it: wherefore some insert a shoot on each tree, that they may not be obliged

D 2

to

<sup>p</sup> The fruit of the wild fig-tree, probably.

to do this every year. The fig-tree retains its fruit, if you dig trenches around it about the Pleiades<sup>1</sup>, and having mixed an equal quantity of amurca and water you pour it on the trunk.

#### XLIX.—TO RECLAIM THE WILD FIG.

You will reclaim the wild fig, if, having cut the branches, you irrigate it with wine and oil, and well besprinkle it during seven days.

#### L.—CONCERNING AN IMPETIGENOUS FIG-TREE.

You will cure the impetigenous fig-tree by planting the squill near its roots, or by dissolving sinople in water, and smearing the stem all around.

#### LI.—TO MAKE THE FIG HAVE A CATHARTIC QUALITY, AND THE TREE TO PRODUCE EARLY FRUIT.

WHEN you plant the fig-tree, throw over the roots some black hellebore pounded with spurge, and you will have figs of a cathartic quality. The figs also ripen before the usual season, if  
having

<sup>1</sup> It is possible the author means the rising of the Pleiades with the Sun in the spring, which was about the 22d of April.

having mixed pigeons dung, and pepper, and oil; you lay them on. Florentinus says in his *Georgica*, that the fig ripens early and heals the bite of venomous animals, when the fruit is smeared with the antidote theriaca. But if you wish to eat figs before the usual season, having mixed pigeons dung and pepper with oil, rub the immature figs with them.

LII.—CONCERNING GRAFTING THE FIG-TREE.

THE fig-tree is grafted on the mulberry and on the plane-tree; and it is grafted, not only in the spring, as other trees are, but in the summer also to the winter solstice, as Florentinus says.

- LIII.—THAT THE FRUIT OF THE FIG-TREE MAY BE WHITE ON ONE SIDE, AND BLACK OR RED ON THE OTHER.

HAVING taken different shoots, and having first tied those that are of the same age, set them in a trench, and manure and water them; and when they shoot, tie both the eyes together again, that they may grow in one stem; and after two years transplant them, if you will, and you will

D 3

have

\* See Palladius, iv. 10, 31.

have figs of two colours. Some also do this more infallibly this way: having tied the seeds of two different figs together in a cloth, they set them, and they afterwards transplant them.

LIV. — THAT THE DRY FRUIT OF FIG-TREES WHICH ARE CALLED ISCHADES, MAY KEEP WITHOUT PUTRIFYING.

THE figs called Ischades<sup>a</sup> will keep sound, if you throw three of them into tar, and lay one at the bottom of the jar, and lay on dry figs, till it is half filled; then put in one of the figs that have been covered with tar, and again a layer of figs, until the jar is filled, and above all the third fig dipped in tar. They will also keep good a very long time, if they are suspended in a basket in the oven, after the bread is taken out, and laid in a new jar, that has not been pitched. But it is proper to gather the figs with the pedicles on which they hung, and to throw brine boiled with oil on them in the sun, and to lay them in the vessel, and to stop it with clay, and<sup>b</sup> to let them be

<sup>a</sup> Dry figs, sometimes called Carian figs.

<sup>b</sup> This member of the sentence appears to me as if it were misplaced. If it came in after the word *sun*, it would seem to be more in its place. If the sentence be thus arranged, the seven last words will be superfluous.

Be exposed to the dew one night, and to lay them in the vessel.

LV.—CONCERNING SOUR OR IMMATURE FIGS.

THE immature<sup>a</sup> figs do not fall, if you throw a chœnix of salt on the root of the tree, and cover it with mould.

LVI.—HOW ONE MAY KEEP GREEN FIGS FRESH,  
AS ON THE TREES.

FIGS do not remain on the trees after they are come to maturity, as other fruit, but they fall spontaneously, although nobody gathers them: but it is possible to keep them fresh, as if on the trees, in this manner. When you are going to stop the wine-casks, take a new pot, or some other vessel, that is not round, but, if you can, one that has a square bottom; then gather the figs that are rather unripe, with their pedicles, or footstalks, that is, with the part on which they hung on the tree, lay them gently in the pot, at some distance from each other, and having carefully stopped it, set it in the cask so that it may swim; then cover the cask; and these will keep as you laid them in, unless the wine turns sour.

D 4

You

<sup>a</sup> Called *αδωροί*.

You will also keep figs fresh this way : you must take from the sides of fresh gourds, certain portions like patches\*, and excavate them ; then lay one in each hole, and stop it with the patches that were taken off, and lay them in a shady place, kept at some distance from fire and smoke. But it is necessary to gather them, as it has been already observed, with their pedicles ; for when whole they keep during a very long time. Some laying the figs in honey so as not to touch one another, nor the vessel, and having stopped them, let them remain. Others lay a glass carefully, or something else that is transparent, with its mouth downward, over the figs, securing them with wax, leaving no vent-hole, and they keep without withering.

LVII. —CONCERNING THE SEASON FOR PLANTING ALMONDS, AND THE CARE AND GRAFTING OF THEM.

It is better to plant almonds in the autumn to the winter solstice ; for it is not so practicable to plant these in the spring, because this plant shoots very

\* *Ἐπληρωτικὰ κοινότητα*. *Ἐπληρωμα* were small pieces of cloth, on which surgeons used to spread their plaisters.

\* The Greeks sometimes gave the almond the epithet *Θάσος*, from the island of Thasos. It was sometimes called by the Romans *nux Græca*.

very early. This plant loves warm situations, and it therefore seems more adapted to islands. It is likewise proper to graft the almond in the autumn; then it commonly appears in the spring: and you ought to take the shoot of the almond that is to be inserted, not from the summit, but from the middle of the tree. Almonds are also raised from seed, and from quicksets, and from offsets or suckers. But some take a cutting from the highest part of the tree, and plant it, and they have met with great success. When we indeed raise the almond from seed, we ought to take fresh seeds, and previously to macerate them in manure made soluble with water. Some also macerate the seeds in hydromel for a night. The seed to be planted ought to be set straight, with its pointed end downward, and that which is obtuse and not<sup>x</sup> slender, upward. Some also say that the plant grows more propitiously, when some fennel giant is previously thrown into the trench.

LVIII.—WHEN YOU OUGHT TO GATHER THE  
ALMONDS.

WHEN their hull is going to break, gather them; and having stripped the hull, wash them  
in

<sup>x</sup> Καὶ λεπτοί. The last word ought to be λεπτοί.



in brine; for this makes them white and wholesome; and having dried them, lay them in the sun. But if you lay them in straw, they are easily stripped of the hull.

**LIX.—TO MAKE BITTER ALMONDS SWEET.**

You will make the bitter fruit sweet, if you perforate the stem of the tree a palm high in its four sides, that it may take off the sap every year until it becomes sweet. But some, acting more judiciously, dig round the tree, and throw in hogs faeces, pouring in urine also: having then laid on the mould, they water it regularly, until its sap becomes sweet. But the stem of the almond-tree, when wounded, casts its fruit. You will also make the fruit tender and sweet, which was before hard and bitter, if you open the earth around the roots, and constantly water them with warm water, before the tree blossoms.

**LX.—TO MAKE ALMONDS GROW WITH CHARACTERS ON THEM.**

HAVING skilfully cracked the almond, and having kept the kernel whole, and having opened it, inscribe what you please in the inside; and  
 tying

tying it again in papyrus, plant it ; covering it with clay and hogs fæces, lay on the mould.

**LXI.—TO MAKE THE STERIL ALMOND-TREE  
PRODUCE FRUIT.**

BUT you will make the steril almond-tree produce fruit by exposing its roots in the winter : and if it indeed persists to produce leaves, but no fruit, having perforated the part<sup>r</sup> of the stem near the ground, drive a piece of the resinous pine into the hole, pour on some urine, and then lay on the mould.

**LXII.—CONCERNING GRAFTING THE ALMOND-TREE.**

THE almond-tree is grafted, not on the extreme branches on the trunk, but on those branches that run up in the middle, at the end of autumn.

**LXIII.—CONCERNING THE SEASON FOR PLANTING CHESNUTS.**

THE chesnut, which some call the glandiferous tree of Jupiter, delights in sandy land and in cool

<sup>r</sup> The Greeks use *σάκος* to express this part.

cool situations; and it is raised from quicksets and from seed, but the surer method is from plants, for they will produce fruit after two years. But it is planted from the equinox, not only from truncheons and from layers, but also from suckers and quicksets, as the olive. But chesnuts are sown, not in the same way as the almond and nuts\*, but having the pointed part upward.

#### LXIV.—CONCERNING THE SEASON FOR PLANTING NUTS, AND THE CARE OF THEM.

WALNUTS are planted in the same season as the almond, and they are raised from seed, and from offsets, and from suckers; and they love dry and cool situations, rather than such as are warm: but if you are going to raise the nut from seed, you will act more judiciously, if you macerate the seed in a vessel containing urine, during five days, and then plant it, and the kernel and the shell of the nut will be tender: and you will make the almond the same by continually throwing ashes on the trunk and roots of the tree. The nut-tree will also grow more propitiously when

\* Walnuts.

\*The original is more expressive in relation to the quality of the urine. *Ureæ raris, apertis.*

when often transplanted, and especially if one drives a copper nail, or a piece of stick, into the tree, till it reaches the pith: and if a person perforates the pith with an auger, and makes a piece of elm of the size of the hole, and sets it in, having thoroughly perforated the tree, he will make the nuts, that are hard and coarse, tender. The walnut-tree also does not cast its fruit, if you tie the root of mullein and a crimson rag from the dunghill round the tree.

#### LXV.—CONCERNING GRAFTING THE NUT-TREE,

SOME of the writers on agriculture say that the nut-tree has not been used to be grafted, nor other trees that have a resinous sap; and that they neither receive another plant, nor can they be inserted on other trees: but this is not true, as experience has often stood the test; for I have frequently grafted and inoculated pistacia-trees on the terminthus, which the people in the country call terebinthus, which has a copious flow of resin, and I had large trees: and I may say that the terminthus receives the graft of the pistacia more cordially than one of its own kind: and I have frequently inoculated and grafted nut-trees, and I have met with much success.

But

But if it does not coalesce with facility, you must not therefore desist on account of the first failure. Some indeed graft the nut-tree thus: after they have sown it, and it is come to some growth, and of the age of two or three years, they take up a plant, they graft the root in the usual manner internally, and they then plant it again. Others also, having selected a shoot from the nut-tree, from which they mean to graft, the year before, turn and twist it; for the shoot being thus treated will have a fuller pith, and it will be more easily trimmed, and when it is grafted it grows strong.

LXVI.—THAT NUTS WITHOUT SHELLS BECOME  
PRODUCTIVE.

You will make nuts have tender shells, if having cracked the nutshell<sup>b</sup>, and having kept the kernel unhurt, you wrap it in wool, or cover it with fresh leaves of the vine, or of the plane-tree, that the seed being naked may not be eaten by ants, and you will thus plant it. Florentinus says that it is the same with regard to the almond and

<sup>b</sup> Το σκαλον. The Greeks applied this word to express the covering of the seeds of plants as well as of testaceous animals, in the same way as the English apply the word *shell*.

and other fruits, that have a hard integument, when they are planted in this manner. They assiduously throw ashes over the stem and roots of the tree.

LXVII.—THAT THE NUT OR ANY OTHER TREE  
MAY BE DRIED UP.

WHEN fasting, chew a fresh lentil, that is, the seeds; and after you have chewed them, while you have them in your mouth, when the nut-tree is in blossom, lay hold of any one of the branches with your teeth, and it will be dried up. Or fix a red-hot spike in the root of any tree; or perforate it with an auger, and set in a piece of the tamarisk; or, having dug round it, lay dictamnus<sup>c</sup> or beans, or a polluted<sup>d</sup> rag, on the roots of it.

LXVIII.—CONCERNING THE PONTIC NUT,  
CALLED THE SMALL NUT.

THE Pontic nut is also set at the same time with the almond and the walnut; and it loves a white clay and watery situations. There is also one sort that is round, and one that is oblong; and

<sup>c</sup> Now sometimes called *fraxinella*.

<sup>d</sup> This is more accurately expressed in the Greek.

and the round one, when set in the same season with that which is oblong, shoots speedily.

**LXIX.—CONCERNING MULBERRIES, AND HOW THEY BECOME WHITE.**

THE white poplar, being grafted or inoculated from the mulberry-tree, produces white mulberries. Mulberries keep a very long time in a glass vessel. They are also planted at two seasons, in the autumn and in the spring, and principally from shoots, as fig-trees: and they grow propitiously, when the earth lying around them is constantly stirred, not deep, but to the roots near the surface. Mulberry-trees may be also raised from seed, if one first macerates the mulberry, and picks out the seeds, and sows and waters them; but it is better raised from a cutting and a truncheon. It is also grafted on the chesnut and on the beech.

**LXX.—CONCERNING KEEPING AND LAYING UP MULBERRIES.**

MULBERRIES, carefully laid in a glass vessel, keep during a very long time, when covered with their own liquor, and stopped.

**LXXI.**

• Bixney was a small jar.

**LXXI.—CONCERNING THE PLANTING OF THE  
MEDLAR.**

THE medlar is planted in the same way as the quince, from the ninth<sup>f</sup> of the calends of April.

**LXXII.—CONCERNING THE PLANTING OF THE  
CAROB-TREE.**

THE carob-trees are planted in the same manner nearly as the olive-trees, but in moist situations, from the ninth<sup>g</sup> of the calends of January to the fourth<sup>h</sup> of the calends of February.

**LXXIII.—CONCERNING THE EXPLANATION OF  
THE NAMES OF ESCULENT FRUIT AND NUTS.**

As the writers on agriculture, men of consummate experience, do not explain the names of fruit to us in common terms; but sometimes indeed make mention of a royal nut, and sometimes of a <sup>3</sup>pontic nut, and sometimes of the glandiferous tree of Jupiter: I deem it necessary to

VOL. II.

E

explain,

<sup>f</sup> The 24th of March.

<sup>g</sup> The 24th of December.

<sup>h</sup> The 29th of January.



explain, which is the royal, and which the pontic nut, and the names of fruit mentioned by them. The royal nut then is that which is called by us the nut<sup>1</sup>; and the pontic, that is the small nut; the glandiferous tree of Jupiter is the chesnut; the coccumelon is what we call the damson; the armeniaca is the apricot; the terminthus<sup>2</sup> is what we call the terebinthus.

#### LXXIV.—CONCERNING THE DIFFERENCE BETWEEN FRUIT AND NUTS.

THAT is called fruit<sup>1</sup> which is of a green colour, as the duracina, apples, pears, damsons, and such as have no hard covering externally; but those are called *akrodrua*<sup>m</sup>, which have a shell externally, as the pomegranate, the pistacia, the chesnut, and such as have fruit with a hard covering on the outside<sup>n</sup>.

#### LXXV.

<sup>1</sup> The walnut.

<sup>2</sup> It is called by this name by Theophrastus, Dioscorides, Galen, and by most of the ancient authors.

<sup>1</sup> *ὄνυχα* is what the Romans called *ponum*, that is, esculent fruit without a hard rind, as the *ακροδρυα* had.

<sup>m</sup> *Ακροδρυον* was fruit, the covering of which was a shell.

<sup>n</sup> To distinguish them from the olive and other fruit, the seed of which has a hard covering within the pulp or fruit.

LXXV.—CONCERNING THE TIME AND MANNER  
OF GRAFTING TREES.

THERE are three modes of grafting, and one of them is indeed properly called grafting; and the second is grafting<sup>o</sup> in the rind; and the third is inoculation. It is indeed proper to graft<sup>p</sup> the trees that have a thick bark, and that abound in sap, the bark of which draws much moisture out of the ground, as the fig and the cherry tree, and the olive plant. But it is necessary, before the grafting in the rind, to prepare a small stick from some firm wood, to let it down a little way between the bark and the wood, that the bark may remain unbroken; for it is necessary to observe this, then to remove the stick with caution, and immediately to set in the graft; and this mode is called grafting in the rind: but in trees that have a thin bark and are dry, and which have their moisture, not in the bark, but in the pith, such as the citron and the vine, and others of this kind, they divide the wood in the middle, and set in the shoots; and this mode is

E 2

called

<sup>o</sup> In the Greek, *εμφυλλισμος*.

<sup>p</sup> The Greek expression here is, “to graft in the bark.”

called grafting<sup>1</sup>. It is necessary in both the fore-mentioned modes to perform the operation succinctly, that neither the shoot that is applied, nor the tree that receives it, may become dry when the application is made. It is also proper to take off the shoots from generous, and full-grown, and fruitful trees, with sharp pruning-knives, from the north side, tender and smooth, with many eyes, having two or three points, but one at the bottom; let them be of the thickness of one's little finger; and let them be two years old, for those that are one year old are indeed apt to run up, but they are steril. It is proper to trim the shoots with a sharp knife on one side at the bottom, as you do a writing pen, observing that there may be no diminution of the pith. It is also proper to form the shoot so that the woody part may be adapted to the wood, and the bark to the bark. Let the shoot be also trimmed of a proper size for the fissure, and for the place<sup>2</sup> that is prepared, in which it is to be set. Let it then be trimmed to the distance of two inches, and let the plant that receives it be slit two inches deep :

<sup>1</sup> Now called cleft-grafting.

<sup>2</sup> Καὶ τὸ κοιλώματι, "and for the hollow place." It means the place which was prepared to receive the shoot.

deep: and after it is set in, no part of the shoot is to be taken off, but it is to be left as it is; and it is necessary to cover the place with white clay that does not crack, for the yellow clay is unfit for this, for it scorches the stems. The mode of grafting is also so far useful that, if a person graft the plants on their own kind, they thrive and improve. But it is necessary to select the shoots when the moon is ~~in~~ decreasing, ten days or more before the grafting, and to lay them in a vessel carefully covered, that no air may be let in; for the shoots indeed that are selected must be kept close, but the tree that is grafted must be ready to bud; it is therefore necessary to select the shoots ten days before, or more. Now know the reason why it is not proper immediately to take the shoots and to graft them; for if a shoot is immediately set on the tree, that receives it, in full vigour and swoln, there is an urgent necessity, before an union takes place, that the shoots should wither a little; and that thence arises an opening between the shoot that is set on, and the wood that receives it; and the air moreover entering into the vacant place, does not suffer a coalition to take place. But if the shoots are first laid in some vessel during some days,

E 3

they

• Every necessity, in the Greek.

they remain there to go through what they were to go through after grafting; and when they are applied there is no laxity of the bandages, nor does the air get in, but they soon coalesce. But it is necessary to fix the shoots, not when the north but when the south wind blows. This is also evident, that showers are propitious to cleft-grafting, but unpropitious to shoulder-grafting. It is likewise proper to know that grafting is practised after the autumnal equinox to the winter solstice, and after the blowing of Favonius, that is, from the seventh of the month of February to the vernal equinox. But some say that the best season for grafting is immediately after the rising of the Dog-star, and again in the summer after the burning heat of the Dog-star. If the shoots are conveyed from a distance, let them be brought fixed in clay, and let the vessel be carefully stopped, that there may be no vent.

LXXVI. — CONCERNING GRAFTING IN THE RIND, CLEFT-GRAFTING; AND WHAT SORTS OF TREES ARE CAPABLE OF GRAFTING IN THE RIND, AND OF CLEFT-GRAFTING.

THE fig is inserted on the mulberry and on the plane tree. The mulberry is inserted on the chesnut,

chesnut, and on the beech, and on the apple-tree, and on the terminthus, and on the wild pear, and on the elm, and on the white poplar, from which white mulberries are produced. But the pear is inserted on the pomêgranate, and on the quince, and on the mulberry, and on the almond, and on the terminthus: and if a person inserts the pear on the mulberry, he will have the fruit of a red colour. Apples are grafted on every kind of wild pear, and on the quince, and they become the best sorts, which are called the sweet apples at Athens; and on the damson also, and *vice versâ*, and on the plane-tree, from which the apples grow red. The walnut is grafted on the arbutus only. Pomegranates are inserted on the willow. The bay is grafted on the ash<sup>t</sup>. The duracinum is inserted on the damson and on the almond. The damson is grafted on all sorts of wild pears, and on the quince, and on the apple-tree. The chesnut is grafted on the nut-tree, and on the oak, and on the beech. The cherry is grafted on the terminthus, and on the peach, and in reversed order. The quince is grafted on the oxyacanthus. The myrtle is inserted on the willow. The apricot is inserted on the damson

E 4

and

<sup>t</sup> Some think this ought to be *ως μηλων* instead of *ως μελιων*, i. e. on the apple.

and on the almond. The citron having so thin a rind, hardly receives a graft: but it is grafted from its own kind, and from the apple, which I have frequently done, and after it shot, it withered; but I think, if it takes, it will produce the citrons called the apple-citrons; and if any person inserts the citron on the mulberry, it will produce red citrons. The quince and the wild fig receive all kinds; therefore graft or insert what you please on these. The citron is properly grafted on the pomegranate, as Didymus says in his Georgics. But Florentinus says in his Georgics, that the vine is properly grafted on the cherry", and that it produces grapes in the spring; and that the olive grafted on the vine produces the fruit called the olive grape. The sweet-scented pears are properly grafted on apple-trees, as I have learned from experience.

#### LXXVII. — CONCERNING THE SEASON AND MODE OF INOCULATING.

INOCULATION is seasonably practised before the summer solstice. I have indeed inoculated about the vernal equinox in fine weather, when  
the

▪ See book iv. c. 5.

the trees were beginning to shoot, and I succeeded very well. But you are to clear the tree that is inoculated from its superfluous parts, that is, from suckers and leaves, having left the more perfect and strongest branches, which are to be budded; then taking a generous bud, that is one year old, from a tree that bears well, you are to set the eye from it with the utmost exactness on the other trunk: and it is proper to take off the bark with precision, and to keep the wood whole and untouched, for this is absolutely necessary. It is also proper that the eye in the bud should fall on the eye in the stem; for when set on it, it totally coalesces. But one may inoculate, and without an eye, on another part of the stem, in a smooth place; but it is necessary that the barks of each stem should be of equal thickness: and when an union takes place, immediately cut off what is above the juncture, that the nourishment may not get into that part, but to that which is compacted; and when the buds produce three leaves, it is proper to remove the bandages. I indeed have often taken off the eye from a germ a year old, and have not grafted it by itself; but having left the eye unhurt in the germ, and having taken off the bark from the part behind the eye, and having scraped some  
portion



portion of the wood, as we do in making a pen<sup>v</sup>, and having thus grafted with the remaining part of the wood, I have raised generous trees from this mode of insertion. The choicest parts of the branches being inoculated, will produce double the fruit.

LXXVIII.—WHEN IT IS NECESSARY TO DRESS  
THE TREES.

AFTER gathering the fruit you are immediately to dress the great and small trees, such as produce esculent<sup>v</sup> fruit, and such as produce nuts, taking off every thing that is faulty and superfluous, with very sharp knives; and you are to leave but one shoot on young plants; and you are to take off the suckers from the stem, that the plant may be smooth and straight, having three or four young shoots at the top, spreading from each other; and thus the plant is formed, while it is tender.

LXXIX.

<sup>v</sup> Ως ἐπὶ γραφικῇ καλαμῷ. This was made of a reed in earlier ages, and it was afterwards made of a quill; and in reference to this, it is in modern languages called, from the Latin, *a pen, penna, une plume, pluma*, &c. The writing reed of the Greeks was called *συνιγγας*.

<sup>v</sup> Τῇ σπῳγῇ.

### LXXIX.—FOR SIDERATED TREES.

SIDERATED trees being irrigated with unguent<sup>\*</sup> will revive.

### LXXX.—THAT WINGED CREATURES MAY NOT FALL UPON TREES.

RUB the knife with which you prune, with garlic, or hang some garlic on the tree.

### LXXXI.—CONCERNING THE CARE OF PLANTS.

YOU are to leave the plants which are set in the autumn, till the spring, without disturbing them; but when the spring comes, it is proper to dig them four<sup>†</sup> times: and it is necessary to dig those that are set in the spring, when they seem to have taken root, and to do the same thing with regard to those that are transplanted. It is also proper to water the plants during the summer the first year; and you are to remove superfluous shoots, not with a knife, but with your hands, if they are tender, and easily give way; but

<sup>\*</sup> Book v. c. 36.

<sup>†</sup> See Theophrastus, c. P. 3, 14.

but if not, it is better to leave them, than to apply the knife while the plants are yet young ; for they become stunned by the touch of the knife. It is also necessary to fix poles for the support of the plants. It is moreover proper to manure the fruit-bearing trees in the month of January, not immediately on the roots, for it heats them immoderately.

**LXXXII.—THAT ALL TREES MAY BEAR MORE  
FRUIT.**

HAVING well pounded and mixed purslane and spurge, smear the stems : and all trees will produce more fruit, if you apply pigeons dung to the roots of them.

**LXXXIII.—TO MAKE A BARREN TREE BEAR  
FRUIT.**

HAVING<sup>2</sup> girt and tucked up your clothes, and having taken an axe or a hatchet, approach  
the

<sup>2</sup> This opinion relating to the fructification of trees is of remote antiquity, which came from the east, and to which the parable of the fig-tree seems to bear some analogy—*Luke*, xiii. 6. There is a passage in an Arabic writer, which shews that it was not unknown in the east. It relates to the fructification of the palm-tree, and runs thus : “ The master, armed

the tree with resentment, wishing to cut it down: but when any body comes to you, and deprecates the cutting of it, as if responsible for a future crop, seem to be persuaded, and to spare the tree, and it will bear fruit well in future. Bean haulm also, applied to the stem, makes a tree bear fruit.

**LXXXIV.—CURE FOR TREES, HEALING EVERY  
BLEMISH.**

SOME peculiar remedy is indeed exclusively suitable to every tree. Now I will not omit a cure, that is applicable to all trees in general, but will make it public. If you then wish all your trees to remain healthy and to thrive, having dug round them, irrigate their roots and stems with the stale urine of man or beast; and if showers fail, water them. Amurca, mixed with an equal quantity of water and poured over every tree, has the same effect. Some, when they plant trees, rub their

“ with an axe, approaching the tree with an attendant, says,  
“ I will cut down this tree, because it bears no fruit. Ab-  
“ stain, I pray, says the other; it will produce fruit this  
“ year. The master indeed without delay strikes it, but with  
“ the axe inverted: but the other preventing him, says,  
“ Spare it, I pray; I am responsible for it. Then the tree  
“ becomes fruitful.”—*Ibn Alvard.*

their roots with bull's gall, and such as are thus planted remain unhurt. But some, rubbing the stems of the plants with the juice of the herb called *polypremnos*<sup>a</sup>, have kept them unhurt, and have received much fruit. But in general, bean haulm, or the haulm of pulse, or wheat straw, applied to trees, will be of service to them, as Diodorus says in his Georgics.

LXXXV.—HOW ONE MAY TRANSPLANT LARGE AND FRUITFUL TREES.

HAVING made the trenches very deep, and having stripped the leaves, and having kept the thicker branches unhurt, and the roots whole, they set the stems straight, with a great quantity of their own soil, and with manure, observing that they may remain in their primary aspect: and they set two perforated vessels at the sides, that they may constantly water the roots by means of the vessels; and they set on their covers, without stopping the holes. They are also seasonably transplanted before the setting<sup>b</sup> of the Pleiades. But it is necessary, in the planting of the

<sup>a</sup> Sometimes called *Lactuca agnina*; Tabernæmont, i. 18 and 19.

<sup>b</sup> About the beginning of November.

the tree, to observe the original aspect to the east and west.

**LXXXVI. — HOW ONE MAY RAISE PLANTS  
FROM SEEDS BROUGHT FROM A DISTANCE.**

SINCE plants brought from a distance often wither, it is necessary thus to remove those from seeds. When the<sup>c</sup> fruit has ripened on the stem, they take and besprinkle it with dust; they then dry it in the shade, and they afterwards make a trench and set the fruit, and they water it daily, until it shoots; and when it is two or three years old, they transplant it with its roots, and they set it, leaving the tops of the plants only above the soil. The planting of seeds indeed seems to some to be frivolous. But it is proper to know, that every seed produces its own kind, excepting the seed of the olive; for it produces the *cotinus*, that is, the wild, and not the true olive.

**LXXXVII. — THAT TREES MAY NOT CAST  
THEIR FRUIT.**

WHAT is called darnel, found among wheat, being taken up in abundant quantity with its  
roots

<sup>c</sup> Ο καρπός seems here to signify the seed and the fruit.

roots from the ground, when it begins to flourish, and being formed in the shape of a chaplet, if it is thrown round the stem of the tree, brings its fruit to perfection, and it does not cast it. The herb also called mullein, bound round the nut-tree, will not suffer it to cast its fruit; and it does not cast its fruit, if a crab is tied round it. If you likewise bind the stem with lead as with a chaplet, it does not cast its fruit, but it will bring it to perfection. Plants do not cast their fruit, if having dug round the roots, and having perforated them, you set in a piece of the cherry-tree, and lay on the mould. But some, having laid the roots bare, dividing the strongest and largest of them in the middle, set in a hard flint, and then tying them, they again cover them with earth; and Didymus says in his *Georgics* that this verse of Homer contributes to this :

He<sup>d</sup> thirteen months in hard confinement lay.

A stone also, with a hole in it, being found and set on a branch of the tree, likewise retains the fruit, if you inscribe these words on it, and tie it in a proper manner to the tree : “ And it shall be, like a tree planted by running water, which will produce its fruit in season, and its leaf will not fall

<sup>d</sup> *Ilias*, liv. v. v. 387.

fall. The herb *polium*<sup>e</sup> being hung on the tree, keeps on the fruit.

**LXXXVIII.—CONCERNING THE CURE OF TREES THAT CAST THEIR BLOSSOMS, OR THE LEAVES OF WHICH FALL OFF.**

WHAT trees soever shed their leaves, or cast their blossoms, are thus cured. Having dug round the roots, lay on the measure of eight<sup>f</sup> congii of bean haulm mixed with water to a large tree, and to a small one not less than two congii; for thus such as are unhealthy will be cured, and the others will remain free from disease.

**LXXXIX.—THAT PLANTS AND SEEDS MAY NOT BE HURT BY CATTLE OR OTHER BEASTS.**

THROW<sup>g</sup> river or sea crabs, not less than ten, into water, and let them remain eight days; and having covered them, lay them in the open air, that they may be insolated during ten days, and

VOL. II.

F

pour

<sup>e</sup> In English called *policy*.

<sup>f</sup> Χοῦν οκτω.

<sup>g</sup> This prescription is mentioned by Palladius, lib. i. c. 35.



pour the water on such as you may wish not to be hurt for eight days, and you will wonder at its efficacy. Canine fæces, mixed with very stale urine and applied<sup>b</sup>, have the same effect.

**XC.—THAT NEITHER TREES NOR VINES MAY BE HURT BY WORMS, NOR BY ANY OTHER ANIMAL.**

HAVING pounded Lemnian sinople and organum with water, apply it to the roots, and plant squills round them: and if you fix perches of the pine<sup>1</sup> round the trees, the worms will be destroyed. If hogs fæces, diluted with the stale of an ass, are applied, this keeps the tree unhurt from worms, as Didymus says in his Georgics: and he says that if you apply bulls gall to the roots, the tree neither soon decays, nor will it produce worms. Trees will not be worm-eaten, if, having laid the roots bare, you apply pigeons dung to them all around.

<sup>b</sup> Besprinkled, in the Greek.

<sup>1</sup> Probably, the resinous pine from which tar was extracted.

## BOOK XI.

## HYPOTHESIS.

These things are contained in this Book, being indeed the Eleventh concerning the select Precepts of Agriculture; and comprising the trees<sup>\*</sup> for chaplets, and the evergreen trees, and the planting of roses and lilies and violets, and of other sweet-scented flowers.

I.—WHAT TREES ARE EVERGREEN, AND DO NOT  
SHED THEIR LEAVES IN WINTER.

**T**HE evergreen trees that do not shed their leaves in the winter are fourteen; the palm, the citron, the strobilus, the bay, the olive, the cypress, the carob, the pine, the ilex, the box, the myrtle, the cedar, the willow<sup>†</sup>, and the juniper.

F 2

II.

<sup>\*</sup> Some of the Greek writers say these were roses, myrtles, and bays.

<sup>†</sup> *Iris*. Some have supposed that this ought to be written *lasia*, the fir-tree.

## II.—CONCERNING THE BAY-TREE.

DAPHNE was a most beautiful daughter of the river Ladon<sup>m</sup>; and Apollo being smitten with her, pursued her as his beloved object. When she was therefore apprehended by the god, they say that she supplicated her mother Earth, and that she was received by her; and when the Earth produced a tree for her, Apollo was struck with astonishment at the sight of it, and he called the tree Daphne, after the name of the virgin: and taking a sprig of it, he crowned himself with it; and from that time the plant became a symbol of divination. They also call the damsel Sophrosune, and this is not improper, for divination proceeds from chastity, and the ancients consecrate this to Apollo, because the plant is of a hot<sup>n</sup> nature, and Apollo is fire, for he is the same as the sun; whence it is hated by demons, and where there is a bay-tree demons betake themselves to flight. They also who burn this when performing acts of divination, seem to find the aid

<sup>m</sup> A river of Greece, of which Philostratus and Aphthonius feign Daphne to be the daughter. Callimachus says it was a large river. Hymn 1. 18.

<sup>n</sup> Eusebius *de præpar. Evang.* says that the bay was dedicated to Apollo, because it was of a fiery nature.

aid of prediction. They also say this with regard to the bay, that it contributes to health; whence its leaves and dried figs were given to the magistrates by the people on the first<sup>o</sup> day of the month of January. Neither does the epilepsy, nor a demon, infest the place where the bay-tree is; nor does thunder approach the place where it stands. A palace has also been called *Daphne*, derived from the name of the bay-tree<sup>p</sup> at Rome; for they say that Latinus, the brother indeed of Telegonus, and the son of Circe, and the father-in-law of Ænæas, when building the citadel before the arrival of Ænæas, found a bay-tree there. The ancients also called the palaces of kings, citadels<sup>q</sup>, as they were for the sake of security built in the most elevated parts of cities.

### III.—CONCERNING THE GRAFTING OF THE BAY, AND THE SOWING AND TRANSPLANTING OF IT.

QUINTILIUS says that bay-trees are grafted on each other, and on the service, and on ash-trees.

F 3

But

<sup>o</sup> Macrobius says, that the old bays were changed for fresh ones the beginning of March, in the houses of the high priests called Flamines, s. i. 12. This seems to have been done before January and February were added to the calendar.

<sup>p</sup> See Æneid. lib. vii, v. 59, &c.

<sup>q</sup> *Ἀκροπόλεις*.

But Diophanes says that the seed of the bay-tree is gathered about the calends of December, and it is sown after the ides of March; and the plant is removed and transplanted in October. The Romans also call this the plant of good genius, and it is well adapted for hedges of vineyards.

#### IV.—CONCERNING THE CYPRESS.

THE cypresses have two names, and they are indeed called *charites* on account of their delectable quality, and cypresses, on account of their bearing and producing branches and seed in such regular order. They were the daughters of Eteocles; and when dancing in imitation of the goddesses, they fell into a well; and the Earth, commiserating their misfortune, produced flourishing plants like the damsels, forming them for the delight of men, and for perpetuating their memory.

#### V.

Some of the ancient writers have said that it is injurious to the vine. Theophrastus, iv. 20. Pliny, xiv. 24.

There are several accounts of their origin. Ovid. *Metam.* l. 10. v. 106. Pliny, xvi. 33, &c.

<sup>109</sup> The word refers to the damsels.

## V.—CONCERNING THE PLANTING OF THE CYPRESS.

THE seed of the cypress is indeed gathered after the calends of September, and it<sup>a</sup> is sown in beds from the ninth of the calends of November throughout the winter: and after the sowing of the cypresses, sow some barley thin (and the cypresses frequently grow to a considerable height the same year, for they grow as much as the barley); and transplant them. The shoots also growing spontaneously, which arise from the cypress, are transplanted in the same manner. But Dēmocritus says that the cypress ought to be planted within a hedge, that it may grow both for pleasure and as a fence. It loves wet and sheltered situations. The male<sup>v</sup> cypress is steril.

## VI.—CONCERNING THE MYRTLE.

MYRSINE was an Attic maid, surpassing indeed all the damsels in beauty, and all the young men in strength; and she was acceptable to the goddess Minerva; and she exerted herself in the

F 4

palæstra,

<sup>a</sup> Cato says it was sown in the beginning of the spring, c. xlviii. 1.

<sup>v</sup> See Pliny, xvii. 10.

palæstra, and in the race; and she crowned warriors and conquerors: but some of those that were overcome, being enraged at the maid, murdered her from envy: they did not indeed extinguish Minerva's affection for her, but the myrtle remains grateful to the goddess as well as the olive, although<sup>v</sup>, having changed its mode of life, it bears myrtle-berries instead of olives.

## VII.—CONCERNING THE PLANTING OF THE MYRTLE.

It is proper to plant the myrtle in all the most elevated parts of the country, for it produces much grateful smell in the place. Some indeed propagate it from suckers, taking the plants that have roots: others also take a very generous shoot from the top of the tree, and set it straight, throwing some good soil with manure on it; and they heap on the mould up to the shoots that have arisen from it. Some likewise set truncheons of the length of a cubit, and<sup>x</sup> of considerable thickness, in the trenches; and they cover them with

<sup>v</sup> The sense of this passage seems to be this: "The myrtle is not less acceptable to Minerva than the olive-tree, although it does not produce olives, but myrtle-berries.

<sup>x</sup> "Of the thickness of one's hand," in the Greek

with earth, when laid in an oblique<sup>r</sup> position, in the same manner as the olive. Some also having rubbed a rope, made of butomus<sup>s</sup>, with the seed fresh-gathered, set it in a trench. But some think that they bear better if they are planted in an inverted position. It also loves to be assiduously pruned; and it thus runs up straight and high, and it grows fit for basket work and for darts: but you are to water it with urine, and especially with sheep stale, for it loves this immoderately. It also produces good<sup>a</sup> fruit when irrigated with warm water. It is grafted on its own kind, on the white and the black sort, and *vice versa*<sup>d</sup>; and on the wild pear, and on the apple-tree, and on the medlar, and on the pomegranate: and if roses are planted near it, both will flourish, and they<sup>b</sup> will produce very generous seed.

#### VIII.—CONCERNING THE KEEPING OF THE MYRTLE-BERRIES.

HAVING laid the berries in vessels that are not pitched, and having stopped them, you will keep

<sup>r</sup> See book v. c. 9.

<sup>s</sup> Water gladiole, book ii. c. 6.

<sup>a</sup> "Fruit without kernels," in the Greek.

<sup>b</sup> *Εὐγενέστερον αἰσίου καρπῶν.*



keep them green during a long time : but some lay them up with their branches.

#### IX.—CONCERNING THE BOX-TREE.

THE box is planted from layers, and from cuttings, and from slips, set in the nursery after the 13<sup>th</sup> of November ; but being an evergreen, it likes moist situations.

#### X.—CONCERNING THE PINE.

THE pine, being at first a maiden, was changed from a double affection. For Pan<sup>d</sup> indeed loved the damsel, and Boreas also loved her ; and each of them urging his suit, the girl's affection was fixed on Pan ; and Boreas became jealous on this account, and having driven the damsel on rocks<sup>e</sup>, consigned her to destruction : but the Earth, pitying her misfortune, produced a plant of the same name as the damsel ; and she having changed her existence, continues her affection as at first ;  
and

<sup>c</sup> The 13th of November.

<sup>d</sup> *Arcadio Pinus amata Deo.*—Propert. i. 18, 20.

<sup>e</sup> This seems to allude to shipwreck.

and she indeed crowns Pan with her branches, but the tree laments when Boreas blows on<sup>f</sup> it.

#### XI.—CONCERNING THE PLANTING OF THE PINE<sup>g</sup>.

THE cones are planted in the same manner as almonds, in the month of October till January; but they are gathered in June before the *etesia*<sup>h</sup> begin to blow, and the grains to fall, when the integument bursts.

#### XII.—CONCERNING THE LENTISC.

THE lentisc indeed likes wet situations, and it is planted from the calends of January: but they say that it produces seeds three<sup>i</sup> times; and if the first seed is good, it indicates that the first sowing will succeed well; and it is the same with regard to the others:

#### XIII.

<sup>f</sup> Towards it, in the Greek.

<sup>g</sup> ΠΙΤΤΥς was that species of pine which produced tar.

<sup>h</sup> Called by the Romans *venti subsolani*. The Greeks gave them this appellation on account of their returning at stated periods; Gellius, ii. 22.

<sup>i</sup> See Cicero de Divinat. l. i. c. 9. Arati Διοσμη. v. 319.

## XIII.—CONCERNING THE WILLOW.

THE willow likes a miry and watery soil, and a moist and cool air; and it is planted in the month of February from trunchéons and cuttings. But Democritus says how the seed of the willow, when ground and mixed with the provender of cattle, makes them fat; and when drunk after it has been pounded, it makes the human race steril; from which circumstance Homer<sup>k</sup> says,

“ Of the abortive kind have been these three,  
The alder, poplar<sup>l</sup>, and the willow-tree.”

## XIV.—CONCERNING THE ILEX.

IT is necessary to plant the ilex<sup>m</sup> before the calends of March. They also say that the ilex, if it produces much fruit, portends plenty.

## XV.

<sup>k</sup> Pliny says that is called *αλεστιακρος* by Homer, because it sheds its seed very early before it comes to maturity, *Nb.* xvi. 26. With regard to the other opinion, see Eustathius, *Σκ.* λ. 834.

<sup>l</sup> Black poplar.

<sup>m</sup> Matthioli mentions two species, the ilex and the *ilex latifolia spinosa*. The *coccifera* produced the kermes or scarlet grain of the ancients. The acorn of the ilex is called *αυδος* by Aratus. *Matth.* i. 10, 11. and iv. 43.

# XV.—CONCERNING THE DENDROLIBANUS.

LIBANUS<sup>a</sup> is a Syrian name, when applied to the mountain and to the plant<sup>o</sup>: for there was a youth who served the gods; wherefore wicked men, moved by jealousy, put him to death: but the Earth, honouring the gods, produced a plant of the same name as the youth who fell; and although he changed his nature, he is not destitute of affection towards the gods; whence a person proves more acceptable to them by offering frankincense than gold.

# XVI.—CONCERNING THE PLANTING OF THE DENDROLIBANUS.

THEY say that the dendrolibanus is planted from roots and suckers, set in the ground and transplanted.

<sup>a</sup> The name comes from the oriental word לבן, when applied to the mountain, because it is in the language of Tacitus *nivibus semper fidus*. When applied to the plant, it is by the Arabs called بَابَان, which is strictly the frankincense, which comes from it.

<sup>o</sup> Dendrolibanus in this place means rosemary, because its leaves have a smell like frankincense; Pliny, xxiv. 11.

transplanted. It has a sweet<sup>p</sup> and a strong smell, as Democritus says; and it is of service to persons who labour under a depression of spirits; and it is planted in the month of March.

## XVII.—CONCERNING THE ROSE.

LET him that admires the beauty of the rose, reflect on the wound of Venus, they say; for the goddess indeed loved Adonis, and Mars on the other hand loved her: but Mars in a fit of jealousy killed<sup>r</sup> Adonis, thinking that the death of Adonis would put an end to her affection for him; but the goddess, having understood what had been done, hastened to be revenged; and throwing herself in a hurry on the rose, when without her sandals, she was wounded by the thorns of the rose in the sole of her foot; and the rose, which was before white, from the blood of Venus, changed into the colour in which it is now seen, and it became red and sweet-scented. But others say that, when the gods were feasting above, and there stood a great quantity of nectar,

Cupid

<sup>p</sup> See Diosc. iii.\*89; Pliny, xxi. 10, and xxv. 9.

<sup>r</sup> It is said that he was turned into a boar; Dionys. lib. xli. p. 1064. Wech.

Cupid led the dance, and with his wing struck the bottom of the bowl and overturned it, and that the nectar poured on the ground made the rose of a red colour:

**XVIII.—CONCERNING ROSES; AND HOW ONE MAY MAKE THEM MORE SWEET-SCENTED, AND HOW ONE MAY ALWAYS HAVE THEM.**

IF you plant garlic among roses, they will be more sweet-scented; and if you wish to have a constant supply of roses, plant them monthly, and dung them, and you will have them all the year. But roses are planted various ways; for some transplant such as have taken perfect root; and some take them up with their roots, and cut them to the length of a palm, that is, of four fingers breadth, the roots and what is shot from them, and they plant all the cuttings at the distance of a cubit from each other. Some, forming them into chaplets, plant them for their fragrance: But it is proper to know that roses planted in dry situations, as well as lilies, will be of a more pleasant smell. Roses also come early, when planted in baskets and jars, and having the same attention shewn them as gourds and cucumbers.

If

\* Shook, in the Greek.

If you likewise wish those that are already planted to produce early flowers, dig a trench at the distance of two palms from the plant, and pour in warm water twice a day. The dew which is found on roses, when gathered clean with a feather, and applied with a specillum<sup>1</sup>, cures the ophthalmia<sup>2</sup>. You will preserve roses fresh and flourishing, if you lay them in amurca, so that the liquor may cover them. Some pluck up green barley with the roots, and put it in a jar that is not pitched, and laying on the roses, close cover and preserve them; but some, having strewn green barley on the pavement, scatter the roses on it. Democritus says, that the rose-tree, when watered twice a day in the middle of the summer, produces flowers in the month of January. Florentinus also says, that the rose may be grafted in the bark of the apple-tree, and that the roses grow in the apple season. Zoroastres says, that a person will have no complaint in his eyes during twelve months, who finding<sup>3</sup> the empalements of the flower on the plant, before they expand,

<sup>1</sup> *Specillum*, an instrument for dilating the natural passages and cavities, called a probe. It is said to have been invented by Æsculapius.

<sup>2</sup> Inflammation of the membranes which invest the eye.

<sup>3</sup> Seeing, in the Greek.

expand; and rubbing his eyes with three of them, leaves the roses on the plant. Some also keep roses fresh by slitting a green reed that is planted, and setting in the buds, and tying them carefully with papyrus, so that they may have no vent. Suffumigate roses with sulphur when they begin to open, and you will instantly make them white. If you wish from a few plants to make more, take and divide the shoots, and make them of the length of four fingers breadth, or a little less, and set them; and when they are a year old transplant them, a foot distant from each other, and so cultivate them, digging them carefully, and removing all the useless wood. I am really persuaded that the rose partakes of something more than what is human, for it makes an unguent of no inferior kind; and it is no indifferent remedy for complaints of the eyes.

#### XIX.—CONCERNING THE LILY.

WHEN Jupiter had Hercules by Alcmena, who<sup>v</sup> was mortal, he wished to make him partaker of immortality; and he laid him to Juno's breast, when she was asleep, while he was in the state of infancy; and the infant being satisfied with milk,

VOL. II.

G

turned

<sup>v</sup> Refers to Hercules.



turned away from the breast, but the milk still flowed copiously when the infant was removed; and what was diffused in the sky made what is called the milky-way<sup>w</sup>; and what flowed on the earth and tinged its surface, produced the lily, which is like milk in respect of colour.

## XX.—CONCERNING LILIES.

IF you wish to make lilies of a purple colour, take the stems when they blow, tie ten or twelve of them together, and hang them in the smoke, for they produce small roots like bulbs from the stems. When the time of planting comes, macerate the stems in lees of old wine, until they appear of a purple colour and well tinged to you, when you take them; then plant them, pouring a sufficient quantity of the lees on each of them, and thus the flowers produced from them will be of a purple colour. Lilies will also keep fresh during all the year this way: they gather them with their pedicles, not yet opened, but while they are close; and they lay them in new earthen vessels, that are not pitched; they then stop the vessels

<sup>w</sup> Other writers mention this; Eratosthenes, *cap. ult.* Manilius, lib. i. Achilles Tatius, p. 146; Euseb. *Præp. Ev.* lib. ii. p. 55, &c.

vessels and lay them by, and when thus preserved they will keep fresh all the year. But if persons wish in the mean time to take them for use, they set them in the sun, that they may be opened when warmed. That lilies may also blow at different periods, when you plant the bulbs, set some twelve, some eight, and some four fingers deep, and you will have lilies during a long time. One may also do this with regard to other flowers. Florentinus says the lily grows red if a person pours cinnabar between the coats of the bulbs, observing that he may not bruise them: and if a person rubs them with any other colour, to which he may be partial, he may raise lilies of any hue.

#### XXI.—CONCERNING THE IRIS.

A SHORT and very small portion of the Illyrian\* iris is set from fresh plants in January to the month of April.

#### XXII.—CONCERNING THE VIOLET.

THE violet sprung from her from whom it has its name. For Jupiter indeed loved Io, and in

G 2

a fit

\* Called Florentine iris, and sometimes orris. This is in modern times brought into England from Italy.

a fit of love lay with her, and he endeavoured to conceal the crime from Juno, and he changed her nature; for Jupiter being caught, and wishing to keep what was done secret, changed the woman into a cow. But the Earth, honouring her who was beloved by Jupiter, produced a flower for the use of the cow; and being raised on her account, it is named from her; and it exhibits the fortune of the damsel by its colours: for it indeed blushes<sup>7</sup> like the virgin, and it reddens like the cow; and it grows of a white colour, indicating the translation of the damsel to the sky<sup>8</sup>; and what colour soever it exhibits, the woman has been of the same.

### XXIII.—CONCERNING THE PLANTING OF VIOLETS.

PURPLE violets, and all the others, the yellow, and those of a russet colour, are planted after the ides of March, and after the calends of May. But the leaf of the violet is refreshing, and it relieves in cases of inflammation; and the oil of  
violets,

<sup>7</sup> That species of the violet called pansy, is here supposed to exhibit the different colours.

<sup>8</sup> To the stars, in the original.

violets, applied<sup>a</sup> in fevers, abates them. The white violet is also raised in the same manner in beds, and it is transplanted in January to the seventh of the ides of February.

#### XXIV.—CONCERNING NARCISSUS.

THE cause of an uncommon misfortune has been still more uncommon; for Narcissus was enamoured with himself, and on this account he perished. He indeed excelled in comeliness of person, and hence arose his affection and desire; for he betakes himself to a fountain to drink, and remaining an attentive observer of his own figure, he became the lover, and the object of his love; but being captivated with himself, he perished. Coming therefore to the fountain, he fell in love with his shadow, as if beloved; but being overcome, and catching at himself, he plunged into the water in the fountain; and seeking relief to his passion, he was deprived of his life; being so far a gainer by this fatal end, that he was changed into a memorable flower of the same name.

<sup>a</sup> Rubbed in, according to the Greek.

## XXV.—CONCERNING PLANTING THE NARCISSUS.

THE narcissus is raised from roots; it begins to shoot in the month of May, and it is transplanted. Its<sup>b</sup> flower is very cold.

## XXVI.—CONCERNING THE PLANTING OF THE CROCUS.

THE crocus is raised from roots when it has rid itself of its blossom. It produces its flower before the leaf: and the flower is gathered when it is of a good colour, the apices<sup>c</sup> being taken from the middle of the flower, and dried during three or four days; then the extremity of it is trimmed, and the white is taken off; and it is laid in earthen vessels as close as may be. But Diophanes says that it is proper to dry the crocus in the shade.

## XXVII.

<sup>b</sup> This looks as if it alluded to the cold habit of Narcissus, who did not look up to a proper object for his affection.

<sup>c</sup> They were what are now called *antheræ*.

XXVII.—CONCERNING SAMPSUCHUM, COSTUS,  
AND BALSAM.

THE sampsuchum<sup>d</sup> is raised from seed, and it is transplanted in April and May: it has a very sweet smell, and it is very hot. Costus<sup>e</sup> likewise, and balsamum<sup>f</sup>, are raised from roots, in the month of November: they both have a sweet smell.

XXVIII.—CONCERNING MISODOULOS OR BASIL.

BASIL, that is, what is called *misodoulos*<sup>g</sup>, is good for no use, as far as I know; for it makes them that eat it as if they were insane, and lethargic, and hepatic<sup>h</sup>: and it is a sign of its malignity, that the goat eats all things, and that it only abstains from basil. This, when masti-

G 4

cated

<sup>d</sup> Sometimes called *amaracus*; Matth. iii. 40.

<sup>e</sup> The Arabian costus has a root like that of ginger; Matthiolus, i. 15.

<sup>f</sup> See Matthiolus, i. 18.

<sup>g</sup> The hate of servants. Some have imagined the plant acquired this appellation, because it put servants in mind of the execrations of their angry masters; for Pliny says, *cum maledictis ac probris serendum precipiunt*, lib. xix. 7.

<sup>h</sup> The ancients, I believe, confined the term to persons who laboured under an inflammation of the liver.

cated and laid in the sun, produces scorpions.<sup>i</sup> But it is most consummately inimical to women, having a natural antipathy to them; so that if a person lays basil with the whole of its roots under a dish of meat<sup>k</sup>, a woman being not acquainted with it, she dares not touch it before the basil is removed.

### XXIX.—CONCERNING IVY.

KITROS was originally a youth, a Bacchanalian dancer; and dancing before the god<sup>l</sup>, he fell down to the earth: and the Earth, honouring Bacchus, produced a plant of the same name, preserving some traits of the youth; for when it comes out of the ground, it intertwines the vine, and it is braced in the same manner as<sup>m</sup> when the youth danced.

### XXX.—CONCERNING THE PLANTING OF IVY.

IVY loves water; and it is planted before the calends of November, and from the calends of March:

<sup>i</sup> Dioscorides and Pliny make the same observation.

<sup>k</sup> Οψα. The term signifies every thing eaten with bread.

<sup>l</sup> Bacchus.

<sup>m</sup> Alluding to the youth's embracing Bacchus.

**March:** and the ivy will produce handsome corymbi<sup>a</sup>, if a person burns three shells, and pounds and sprinkles them over it, or if he irrigates the corymbi with alum water. It also grows white from black, when white earth is macerated and poured on the roots of the ivy during eight days. Damogeron also says, if a person puts three corymbi of black ivy in clean linen, and having tied, binds them on one who has the splenitis<sup>b</sup>, during three days, it will relieve the patient thus bound from his disease.

<sup>a</sup> The berries, when formed into round bunches, are thus called.

<sup>b</sup> Disease of the spleen, which last word is by Hippocrates called the left liver.

BOOK



## B O O K XII.

## HYPOTHESIS.

These things are in this Book, being indeed the Twelfth concerning the select Precepts of Agriculture, and comprising the sowing of different esculent plants, and such as are to be planted and sown in every month, and an admirable method of laying out a garden, and the useful effects of esculent plants.

I.—INSTRUCTION RELATING TO WHAT IS SOWN  
AND PLANTED EVERY MONTH, ACCORDING  
TO THE CLIMATE OF CONSTANTINOPLE.

**I**N the month of January is sown the sea<sup>p</sup> cabbage, with orach<sup>q</sup>, and fenugreek.

In the month of February is sown Macedonian parsley, with leeks and onions, the beet, the carrot, the large-rooted beet, thymbra, the different kinds of lettuces; that is, the dicardium,  
that

<sup>p</sup> See Matthiolus, l. ii. c. 115.

<sup>q</sup> Matthiol. l. ii. c. 112.

that called phrygiaticum, and the rhigitanum, and the white cabbage, and the crambasparagus, and coriander, and anethum, and rue. The lettuce is also transplanted, the picris<sup>r</sup>, the thridax<sup>r</sup>, the phrygiaticum, the polyclonum<sup>r</sup>, and the comodianum.

In the month of March are sown the beet, the enthadium<sup>n</sup>, and orach, and the dicardium, and the rhigitanum. The lettuce is also transplanted, the picris, the phrygiaticum, and the polyclonum.

In the month of April, towards the end of it, are sown, seutlomolochum<sup>r</sup>, and orach, and the dicardium, with the rhigitanum. In the months of March and April also are transplanted, the white cabbage, and the crambasparagus, and the sea cabbage, and the lettuce, with the rhigitanum.

In the month of May are sown seutlomolochum and orach, and mint is also propagated; and the rhigitanum,

<sup>r</sup> This has been supposed to be a species of succory.

<sup>n</sup> This is the common Greek name for a lettuce.

<sup>r</sup> So called, probably, from its numerous shoots.

<sup>n</sup> Some have supposed this to be endive.

<sup>r</sup> Supposed by some to be spinach. Bodæus, p. 778; and Dodonæus, p. 608.

rhigitanum, and seutlomolochum, and lettuce, are transplanted.

In the month of June seutlomolochum is sown, and the dicardium also; and the small leek being covered with clay, is transplanted into a moist place; and beet, and mallows, and the lettuce.

In the month of July are sown succory and seutlomolochum; and the leek is set in dry ground, but it is necessary immediately to water it (that the root may not become hard), otherwise it will wither. It is also necessary to transplant the lettuce, and succory, and seutlomolochum; and the beet, and mallows, are separately transplanted.

In the month of August succory is sown, and seutlomolochum; and the round-headed and the early turnip, and the turnip that is used for asparagus, and the white cabbage; and the leek is transplanted. Succory, seutlomolochum, and radishes, are sown thin; and the rocket, and the cardamon<sup>v</sup>, are sown.

In the month of September are sown seutlomolochum and the late succory, and the wild turnip; the round-headed turnip is also transplanted, and the useful turnip that is used for asparagus, and

<sup>v</sup> Cresses. In Latin, *nasturtium*. Matth. ii. 149.

and the winter succory, and the seutlomolochum at the same time, and coriander, and the radish.

In the month of October are sown for the new year, the lettuce, the picridium, the comodanium, the polyclonum, the thridakin. The turnip is also transplanted, the beet, and succory, and cardamon, and rocket, and the white cabbage.

In the month of November fenugreek is sown, and the wild turnip is transplanted, and the late succory, and beet separately, and mallows separately. Coriander is also sown.

In the month of December are sown the lettuce, the picridium, the polyclonum, the thridakin, the comodianum.

## II.—CONCERNING MAKING A GARDEN.

THE use of making a garden, is a very necessary convenience in life; you are therefore to prepare a garden for the sake of health, and for recovery from illness, not far from your house, but near it, that it may both afford delight from the view of it, and consummate pleasure from the fragrance of it, not lying in the wind from threshing floors, that the plants may not be destroyed

stroyed by the chaff. It is also necessary that a person who prides himself on raising esculent plants, should previously see the seeds are good, the ground suitable, and that there is water and manure ; for good seeds will produce such as will be similar to them, and a suitable and productive soil will preserve what is entrusted to it, and water will make the plants grow by cherishing them, and manure makes the ground of a more mellow\* quality, so that it may receive the water kindly, and that it may impart it to the roots, and promote the growth of the plant.

### III.—CONCERNING LAND ADAPTED TO ESCULENT PLANTS.

THE best land for gardening is that which is neither a white clay, nor yet very rough, nor breaking into wide chasms in the summer ; for the white clay, which is indeed frozen in the winter, and dry in the summer, destroys every thing that is planted in it, or it makes it weak and of no size ; and the white clay would hardly be proper, if an equal quantity of manure were mixed with it : but that which opens in chasms, is altogether useless ; and that which is rough, can

\* Lax, in the Greek.

can neither cherish the plants, nor afford circulation to the water : but there are a few rough and sandy situations well adapted to esculents, such as have plenty of nutritive mould, by which the roots are nourished. You may then with ease fix on a soil calculated for esculent plants ; for having reduced it to a state of solution and washed it, if indeed you find it possessing plenty of nutritive<sup>7</sup> earth, you may judge that it is productive and good for esculent plants ; but if it possesses a more watery substance, it is not good for esculent plants : that mould also which you find soft as wax in the hand, and very glutinous, you may judge to be improper for esculents.

#### IV.—WHAT MANURE IS FIT FOR ESCULENTS.

THE best manure of all for esculent plants, is ashes ; for being very small and by nature warm, they kill the fly<sup>2</sup> and worms, and animals of this kind. The second manure is that of pigeons, and this has the power to destroy noxious animals ; and if a little of it is applied, it will produce  
the

<sup>7</sup> Mud, in the Greek.

<sup>2</sup> In Greek called *ψυλλα*. The Roman name of it was *pulex*.

the same effect as a great quantity of other dung. Some indeed prefer asses' dung to that of pigeons, as rendering esculent plants more sweet. Goats dung is also very good, having the power of affording the same efficacy as those already prescribed. But for want of these, you are to use other manure, yet not fresh, for it produces noxious animals; but let it be a year old, having been frequently turned over with the spade.

V.—HOW ONE MAY HAVE ESCULENTS OF EVERY KIND IN SITUATIONS THAT HAVE NO WATER.

HAVING chosen what measure of ground you wish, and having dug it, to the depth of a foot or of a cubit, and having removed the mould that is dug, take some tiles and lay them in the place that is dug; lay on the mould clean and sifted, with very dry manure, and then set or sow the esculents. But some, instead of tiles, after having dug the place, lay it level with a coat of mortar, as they do when they fix the press, and they then lay on the mould and manure,

\* See Columella, xi. 3, 12.

nure, and they cultivate<sup>b</sup> it. But whether a person uses tiles or a coat of mortar, it is proper to take care to encompass the place that is dug with walls, and to secure these also with mortar, or by means of tiles, so that the water that is poured for irrigation may by no means be wasted; and having done this, they cultivate the whole spot in the same manner as in moist situations, contented indeed in winter with rain water, and watering it in summer; for they have no need of much water, when the wet of all the winter is preserved in the place by means of the contrivance thus invented, and not distributed into the adjacent situations. Some also, when there is not a sufficiency of water, make two gardens, one indeed for the winter season supplied by rain water, and the other for the summer in a shady situation, and lying to the north.

## VI.—THAT A GARDEN MAY BE HEALTHY AND FLOURISHING.

THE garden will be healthy, if you pound some lotus<sup>c</sup> and put it in water, and irrigate it; if you pound fenugreek with water, and irrigate

VOL. II.

H

the

<sup>b</sup> Garden, in the Greek.

<sup>c</sup> Some suppose this to be *trifolium odoratum*, or the *μυρα-  
λινος* of the Greeks.



the beds; or if you deposit the skull<sup>d</sup> of an ass in the middle of the garden.

VII.—THAT ESCULENTS MAY NOT BE EATEN BY THE FLY, NOR HURT BY NOXIOUS ANIMALS OR BIRDS.

ESCULENTS are not eaten by the fly, if you mix a little of the orobus with the seeds, when you sow them; and this is particularly proper for radishes and turnips. But others, acting in a more rational manner, sow or plant rockets<sup>e</sup> with them, and especially with cabbages; for these are hurt by the fly. If you also wish the seeds not to be hurt by any thing else, macerate them in the juice of sempervivum<sup>f</sup>, before they are sown: and you will keep all garden and agricultural seeds safe from every noxious animal, if you macerate them in the juice of the pounded root of the wild cucumber, before you sow them: and esculents will keep unhurt, if you sow them in the hide of the tortoise<sup>g</sup>.

VIII.

<sup>d</sup> See Palladius, i. 35.

<sup>e</sup> *Erodium*. This plant was by the Romans called *Eruca*. Matth. ii. 134.

<sup>f</sup> House-leek.

<sup>g</sup> There is a species of this animal called the coriaceous tortoise, which is covered with a strong hide. The method

# VIII.—THAT CATERPILLARS MAY NOT INFEST HERBS OR TREES.

THROW some ashes of the vine into water for three days, and besprinkle the herbs; or suffumigate the trees or herbs with asphaltus or with sulphur<sup>b</sup> vivum. There will be no caterpillars likewise, if you macerate the seed in a lixivium of ashes of the fig-tree, and then sow it. You will also destroy the existing caterpillars, if you mix urine and amurca in equal quantities, and boil them over the fire, and then let them cool, and so irrigate the herbs. If you also take caterpillars from another garden, and boil them in water with anethum, and let them cool, and besprinkle the herbs, you will destroy the existing caterpillars. But some, when there are many caterpillars, introduce a female at certain<sup>1</sup> periods into the garden, without her shoes, with

H 2                      dishevelled

of drying the seeds in the hide of this animal, and of sowing them, is related by Palladius, l. i. c. 35.

<sup>b</sup> Impure sorts of brimstone now have this name.

<sup>1</sup> The original is here more expressive than it ought to be, Columella and Palladius seem to have copied this passage. Col. in hort. v. 357. Pall. l. i. c. 35.

dishevelled hair, dressed in one garment only, and having no other, nor her girdle, nor any thing else; for she going three times round the garden in this figure, and coming out through the middle, will immediately make the caterpillars vanish. When you also fumigate fungous productions under walnut-trees, you will kill them: or if you make a suffumigation with the fæces of bats, and with the haulm of garlic, without the heads, so that the vapour may get round all the gardens, caterpillars<sup>k</sup> will be destroyed.

#### IX.—HOW THE PRASOKOURIDES<sup>l</sup> MAY BE DESTROYED.

COVER a fresh sheep's belly, containing the fæces, and unwashed, with mould, not to any depth, but on the surface; for you will find it full of these worms: and if you do this a second time, you may bring them all together, and you may take and destroy them; for the animal being fond

<sup>k</sup> This member of the sentence is deficient in the Greek.

<sup>l</sup> Hesychius says the Prasokouris was of a green colour, which devoured esculent plants in gardens. It had its name from the leek, which in Greek is called *πρασον*. Theophrastus mentions it, H. P. l. vii. 5. p. 140.



phalangia<sup>a</sup> and of reptiles, if having well-pounded onions and leeks you will mix them with the leaves of the mallows, and lay them on. If a person is also rubbed with the juice of mallows with oil, he will not be stung by wasps; and the juice cures one who has been already stung: and the leaves of mallows, being pounded and laid on, cure the person who has been stung. Mallows likewise being applied<sup>a</sup> cures the disease called *lichen*<sup>o</sup>; it stops hæmorrhages, and it cures the diseases of women. The juice of it also, when poured in, removes the ear-ache; and when it is taken with honey, it cures inflammations of the liver; and it causes persons labouring under the epilepsy to recover. The juice of this also cures diseases of the kidneys, and the sciatica; and a decoction of it being taken, cures the dysuria<sup>p</sup>; and it is useful to women in labour.

## XIII.

<sup>a</sup> See Matthiolus, lib. vi. c. 42.

<sup>a</sup> Rubbed in.

<sup>o</sup> An asperity of the skin, which itches and produces matter. Avicenna says there are two sorts, and that the dry one is the worst.

<sup>p</sup> Difficulty of voiding urine.

**XIII.—CONCERNING THE LETTUCE, AND ITS  
MEDICINAL QUALITIES, AND HOW IT GROWS  
WHITE AND BEAUTIFUL.**

THE lettuce is a moist and cooling esculent, for which reason it is adapted to violent inflammations. It is also an esculent that quenches thirst, and it is good for sleep, and productive of milk; and when boiled, it becomes more nutritious: but it is unfavourable to venereal embraces; whence the Pythagoreans say it is barren, and the women call it *loëse-bane*<sup>1</sup>. But if you wish to have lettuces of good appearance, tie their leaves, that is, the upper part, two days before they are to be removed, for thus they will be white and handsome. Sand also, scattered over them, whitens them. The wild lettuce promotes appetite, loosens phlegm, restrains venery; taken with sweet wine or vinegar, it is good for the bile; with hysop and vinegar, it becomes a good stomachic; and boiled in rose-wine, and administered, it cures the disease called *cholera*<sup>2</sup>, and

H 4

the

<sup>1</sup> The Greek word is too accurately expressive, for the idea it conveys is not of the most modest kind.

<sup>2</sup> A vomiting and purging of bilious and acrid matter. Hippocrates divides this disorder into the moist and dry.

the juice of it cures the swelling of the viscera; and when mixed with the milk of a female, it cures the erysipelas\*. The seed of it, pounded and drunk, cures the bite of the scorpion†; and it is of service in complaints of the thorax. When eaten, it makes persons in health sleep, and such as are ill, when it is laid under them, unknown to them; particularly if a person takes the plant with his left hand out of the ground, before the rising of the sun, and lays it privately under the bed of the patient. And the juice of it also, applied<sup>u</sup> to the forehead of a person that is ill, will make him sleep. If you also wish to make lettuces spread and produce many leaves, and not run into stalk, but to be of humble growth, transplant and water them; and when they come to the height of a palm, dig round them so that their roots may appear, and apply fresh cow-dung to them; and having laid on mould, immediately water them; and when they are grown, divide the plant with a very sharp knife, and set in <sup>on</sup> a clean shell,

\* This was by the Romans called *ignis sacer*. The English name is *shingles*.

† Matthiolus says there are nine sorts of this animal, lib. ii. c. 11. The Spaniards call it *alacran*.

<sup>u</sup> Rubbed on, in the Greek.

shell, that they may increase in breadth, and not in length. The lettuce also, constantly eaten, cures dimness of sight, and makes the patient see clearly, and especially if the plant is sweet. Lettuces also, plentifully eaten, indeed operate as a cathartic; but eaten in less quantity, they are astringent: they are also of service in a cold. If a person eats the lettuce fasting, the change of water will not affect him when he travels; nor will a person become intoxicated, if he previously eats it. The lettuce also grows fragrant when the seed of the citron is set in its seed, and thus sown. The seed, exhibited in a potion, stops the seminal efflux; it is therefore administered to such as are subject to it during sleep. The leaves of the lettuce also, five, or three, or one, will make a person that is ill, sleep, when privately laid under the bed, so that the parts taken from the stalk may be towards the feet, and those that were uppermost toward the head of the patient.

## XIV.

▼ Called in Greek *αμβλυωπια*; obscurity of sight, without a visible defect of the organ. Hippocrates means the dimness of sight to which old people are subject, by this term, Aph. xxxi. 3. It is used for a *gutta serena* by Paulus and Actuarius.

▼ In Greek termed *γοργωπια*. This word, in the modern practice of physic, is inaccurately applied.



**XIV. — THAT THE LETTUCE MAY PRODUCE  
PARSLEY, AND ROCKET, AND BASIL, AND  
SUCH PLANTS, FROM ITS ROOT.**

TAKE a goat's or sheep's dung, and having perforated a small quantity of it, clear the perforated part, and set the seeds of the plants already mentioned, or other seed, in it, and set it not less than two palms deep, having thinly strewn some tender manure before; then lay on some fine mould, and water it gently; and when the seed shoots, water it, constantly scattering on some dung; and when it has grown in the stalk, bestow more attention on it, and the lettuce will grow with the seeds that are set in it. But some work<sup>2</sup> two or three goats or sheeps treddles, which are called *spurathoi'*, and mixing the seeds with them, put them in a cloth, and tying them dig them in; and having bestowed the attention that is necessary, they produce a lettuce of varied growth.

<sup>2</sup> Pound, in the Greek.

<sup>7</sup> More frequently applied to the faces of the goat.

**XV.**

**XV.—CONCERNING BEETS, AND HOW THEY MAY  
BE MADE LARGE.**

If you wish to make your beet of larger growth, and of whiter colour, cover their roots with fresh cow-dung; and as you do in respect of leeks, divide the shoot, and set in a flat stone or a shell. Beets being of a purgative quality, cherish the bowels, being eaten with oil and garum, and a little nitre, immediately after they are boiled. The juice of raw beet cures scaliness<sup>a</sup>, and vermin in the head: and the juice of beet, mixed with wax and melted, and laid on a cloth and applied, cures all hard and inflated tumours; it also cures impetiginous diseases and baldness<sup>b</sup>.

**XVI.—CONCERNING DIFFERENT ESCULENTS,  
AND THEIR MEDICINAL POWERS.**

As I am now interpreting the diction and poetical composition in the horticultural treatise of the most experienced Nestor, I have collected it

<sup>a</sup> Τα πτυγα, a sort of scurf on the head like bran, whence it was called by the Romans *furfures* and *furfuratio*.

<sup>b</sup> In Greek called αλωπικια, because the fox is subject to a distemper that resembles it.

it into a more finished system; and as I have made mention of different plants, I have thought it particularly necessary to arrange their medicinal powers for the use of farmers.

#### XVII.—CONCERNING CABBAGE AND ITS MEDICINAL POWERS.

It is indeed necessary to know that it is proper to sow cabbage in a brackish soil; it is moreover of use, when it has produced three leaves, to scatter pounded nitre, or brackish mould, that has been sifted, over it, that it may appear as if covered with hoar-frost; for it is then more easily boiled. Some also, instead of nitre, use ashes, and for the sake of destroying the caterpillars. Cabbage indeed, moderately boiled and eaten, is rather of a cathartic quality; but when more boiled, it becomes astringent. But be informed of the medicinal qualities of the cabbage. The cabbage forwards<sup>b</sup> the crisis of a periodical complaint, and especially if a decoction of it be drunk with sweet wine: and when eaten after it has been boiled, it cures phthisical habits. If a person boils and pounds cabbage, and mixes it with the water in which it has been boiled, and when it

<sup>b</sup> Εμμενι σπρωγος.

it is cool applies it to fresh and to inveterate wounds and tumours, they are softened. A fomentation of it, when boiled and mixed with barley-meal, and coriander, and rue, and a little salt, and applied, cures the gout<sup>c</sup> in the feet and in the joints: and its juice, mixed with Attic honey, is of service to the eyes, being<sup>e</sup> applied to the corners of them. It is also very nutritious, so that children that eat cabbage grow very fast: and if a person eat poisonous<sup>f</sup> mushrooms, and drink the juice of this, he will be saved. Its juice also, drunk with white wine during forty days, cures persons who have the jaundice, and pain in the spleen: when drunk with black wine, it is of service in coughs. Its leaves being pounded, remove the distemper called *lichen*; and when immediately applied, they cure the bites of venomous reptiles. Cabbage, when mixed with the *alumen<sup>g</sup> rotundum*, and macerated in vinegar, cures

<sup>c</sup> Called *πρωγυα*: the other was denominated *αφθρτης*. Dioscorides recommends the juice of it with the meal of fenugreek for the gout; ii. 46.

<sup>e</sup> This is mentioned by Pliny, xx. 9.

<sup>f</sup> This mushroom was called *βαλυστης*. Matthiolus says it grows on the larch, l. i. c. 7.

<sup>g</sup> Matth. v. 82.

cures the itch<sup>b</sup> and the leprosy; and ashes from its roots are of service in burns. Its juice taken with oil, and kept in a considerable time, removes ulceration in the mouth and in the tonsils<sup>c</sup>, and the swelling of the uvula. The juice with wine, as a fomentation, is of service to the ears: when pounded and applied, it will very much relieve persons in inflammations: and when boiled, and previously eaten, it will relieve the voice and its organs<sup>d</sup>, for which reason singing-masters have been in the habit of using it. Its seed or its leaves, when pounded, if applied with silphium<sup>e</sup> and mixed with vinegar, cure the bites of the *mus araneus*<sup>f</sup>, and of a mad dog, and of a dog that is not mad. A drink of the leaves, when gathered and dried, and then boiled, is given the patients. When pounded and laid on, it considerably lessens the pain of the spleen; and when eaten raw, it promotes sleep, and does not

<sup>b</sup> In Greek *ψαμα*. Modern physicians make this the genus of the disease.

<sup>c</sup> Glands seated near the isthmyon, or the narrow passage between the mouth and the gullet.

<sup>d</sup> The *aspera arteria*, or windpipe.

<sup>e</sup> It has been supposed that the silphium of the ancients was procured from the plant called *laserpitium*.

<sup>f</sup> The Italians call this *topo ragno*; and the Germans *spitzmans*. It is common in Italy. Matth. ii. 62.

not suffer the patient to be incommoded by dreams. But Nestor says in his horticultural treatise, that the cabbage is an emblem of the tear of Lycurgus: for, says he, Bacchus being afraid of him, went under the sea, and Lycurgus being bound with the vine, shed a tear, and he says that from the tear sprung the cabbage, and that on this account the cabbage and the vine have an antipathy to each other. For instance, if the cabbage at any time approach the vine, it immediately withers, or the shoot of the vine decays: and on account of the antipathy existing between them, if it happens, in a cold in the head, that the uvula or the cionis<sup>a</sup> is relaxed, the juice of raw cabbage, applied to the head, draws up the uvula to the roof of the mouth: And if it happens that the vine and the cabbage are planted near each other, the shoot of the vine, as it increases in growth, when it is going to approach the cabbage, does not grow up straight, but it draws back, as if mindful of the mutual antipathy. If a person likewise pours the least quantity of wine on cabbage when it is boiling, it ceases to boil, and its colour will be changed. Persons also, who wish to drink much wine and not to be intoxicated, previously eat raw cabbage.

<sup>a</sup> Aretæus calls the uvula by this name.

bage. But it is proper to know that old cabbage seed will produce the raphanus".

### XVIII. —CONCERNING ASPARAGUS.

ASPARAGUS likes level ground, and it is sown in the spring; therefore make trenches three inches deep, and set two or three grains of seed in each place. Let the trenches be nine<sup>a</sup> inches distant from each other: and let not the plants that are sown be disturbed during the first year, except in weeding. If you indeed wish to produce a good crop of asparagus, pound<sup>b</sup> the horns of wild rams small, and throw them on the beds, and water them. Some relate what is still more paradoxical, that if the rams horns, being whole, be bored and laid down, they will produce asparagus. If you also wish to have asparagus all the year, when you take the seed, immediately weed round

<sup>a</sup> The Roman agricultural writers were of opinion that the seed of the cabbage changed its quality by age. Palladius, iii. 24. Pliny, xix. 10. Varro, i. 40. Theophrastus, C. P. iv. 3.

<sup>b</sup> This measure was called by the Greeks *omithayn*, the distance between the thumb and the little finger when expanded. In English measure, 9.0656 $\frac{1}{4}$  inches.

<sup>c</sup> Pliny mentions this, l. i. tom. 3. p. 610. Dioscorides rejects the idea as not worthy of credit, l. ii. c. 152.

round the roots on the surface; for the plant being thus dressed will again produce asparagus. This esculent does not love irrigation, but dryness rather: but if a person water the plants before the autumn, he will make them more tender and more flourishing.

**XIX.—CONCERNING GOURDS AND CUCUMBERS, AND THEIR MEDICINAL QUALITIES; AND HOW ONE MAY MAKE EACH OF THEM HAVE NO SEED INTERNALLY<sup>1</sup>, AND RAISE THEM EARLY.**

THEY will have no seed internally thus.—Dig into the ground the first shoot or slip of the gourd or cucumber, as soon as it is of a proper size, as you do the shoots of the vine, so that the extremity of the slip may only be bent; and when it is grown, lay mould on it again in the same manner, and a third time, and cutting the intermediate shoots and those above ground, and leaving only the last, I mean the third, you will have gourds and cucumbers without seed. You will also raise cucumbers and gourds without seed, if you macerate the seed before you sow it, three days, in oil of sesamum. You will also

VOL. II.

I

raise

<sup>1</sup> The word seems superfluous.



raise early cucumbers and gourds in this manner: lay some sifted mould mixed with dung, having properly moistened it, in baskets or in useless earthen pots, and anticipating the usual season, for instance, in the beginning of the spring, plant the seeds: and when the sun shines, and it is warm weather, and when it is rather showery, set the baskets in the open air, and toward the setting of the sun take them in under cover; and do this constantly, watering them when necessity calls for it; and when the frosts will perfectly cease, take the baskets or pots into a well-wrought spot, and dig them in evenly with the soil, and bestow on them the attention that is necessary; and if you take away the extremities of the shoots, they will bear fruit more speedily. You will also make them long, thus: if, pouring water into a mortar, or into any other vessel, you set it within five or six inches of them, for the cucumbers will be proportionably longer the next day; but if the vessel has no water, the cucumbers will grow crooked, and they will be bent backward: thus they are indeed so partial to moisture, and so averse to dryness. They will be also transformed into any shape you wish, if you make earthen vessels, and set them in when small, and tie them, for they will fill the figures and impressions; on which principle also,

if

if you divide a reed lengthways, and excavate it, and set in a cucumber, and tie it in it, or if you put in a gourd while it is small, it will fill the reed, growing along the whole extent of it. Gourds<sup>\*</sup> are indeed grateful to the viscera. They will cure pains in the ear, their juice being poured into it. The seed of the cucumber moderates heat of urine, and it is diuretic. These will not be hurt by the fly, if you fix slips of origanum near them while they are small, for they destroy the fly, and they serve as a preventive. If you also lay cucumbers of proportionable length near a sucking child, when he is feverish and asleep, he will be soon cured, for all the heat is attracted by the cucumber. The root of the wild cucumber also being dried and pounded, and drunk with sweet wine, or with hydromel, is of wonderful efficacy for vomiting. If you also wish to have cucumbers less watery, when you dig the trench in which you are going to plant them, fill it half full with straw<sup>\*</sup>, or with dead shoots, and lay on mould, and plant them without watering them. Some indeed make them have a cathartic quality thus: having pounded

I 2

the

<sup>\*</sup> They are eaten in the eastern countries, from June to October.

<sup>\*</sup> Chaff, in the Greek.

the roots of the wild cucumber, they macerate them in river water during two or three days, and they water them during five days with the liquor, and they do this five times. But they become of a more cathartic quality, if, after they have shot, you dig round the roots, and pour a portion of hellebore over them, and having laid on mould, let them remain. Lay cucumbers in sweet and not in sour lees<sup>†</sup> of white wine, and having filled the vessel stop it, and they will keep quite fresh : and when laid in brine, they will keep. You will preserve cucumbers in perfection, if you suspend them in a vessel having a little vinegar, not touching the vinegar, and stop it, that there may be no vent ; and you will have them fresh during the winter. But you are to preserve gourds thus : gather them while tender and cut them, then boil some water and pour it on them, and having cooled them all night in the open air, lay them in strong<sup>‡</sup> brine, and they will keep a long time. You will also make gourds of a cathartic quality, if you macerate the seed a night and a day in scammony<sup>‡</sup>. You will raise cucumbers and gourds by planting the seed in an inverted position.

XX.

<sup>†</sup> Turned, in the Greek.

<sup>‡</sup> Sharp, in the original.

<sup>‡</sup> Matth. iv. 164.

## XX.—CONCERNING MELOPEPONES\*.

THEY are indeed cooling, and they are of a consummate use to a person who<sup>\*</sup> wishes to vomit occasionally; for they, after meals, remove phlegm, bringing up a very considerable quantity, and they purge the head. You will make melopepones have the scent of roses, if you lay their seed with dry roses, and set them together. They have also the power of quenching<sup>†</sup> thirst in a fever. You will likewise make all the fruit of the cucumber plantations sweet, if you macerate the seed in milk and honey, and when dried sow it. If you also macerate the seeds of the cucumber plantations in the juice of the *sempervivum*, you will preserve them unhurt. Let no female at certain periods enter the cucumber plantations, for this is unfavourable to the fruit, and it will grow bitter.

## XXI.—CONCERNING THE TURNIP AND ITS SEED.

THE turnip is not adapted to cure the diseases of the human species; but has the power of  
I 3
curing

\* Melons, Matth. ii. 128.

† This is mentioned by other writers. Diosc. ii. 164. Pliny, xx. 2.

‡ Some other writers mention this. Rhazes, lib. i.

curing the contusions of ~~animals~~, being applied under the hoof, and tied. But the seed of the turnip after three years produces cabbage, and *vice versa*.

## XXII.—CONCERNING RADISHES.

RADISHES will be sweet, the seed of which has been macerated in œnomel, or in the juice\* of the dried grape. They are useful in phlegmatic and nephritic\* cases, especially if a person boils down the outside of them with wine, and takes it fasting early in the morning; and when eaten with honey, they cure coughs; and their seed, when heated, and taken with honey, likewise removes coughs and difficulty of breathing. Being given to women in child-bed, they produce plenty of milk. They provoke to love: they are hurtful to the voice. If a person takes them fasting, he will be secure from the effect of poison. Their juice, when taken in water, is an antidote against poisonous mushrooms, and other poisons. If a person also carefully smears and rubs his hands with the juice of the radish, he may take hold of  
noxious

\* It must have been necessary to macerate this grape to procure this juice.

\* Diseases of the kidney.

noxious reptiles without fear or danger. When laid on scorpions, they immediately kill them. When taken out of water, they relieve in the dropsy and in the spleen. Their juice drunk with sweet wine, before going into the bath, cures the jaundice. If a person takes them with honey, and retains them a short time, and throws them up, they purge the stomach<sup>b</sup>, for they are adapted to excite vomiting, and they promote an appetite in those who loathe their food. They also cure the quartan ague, if a person constantly takes and throws them up. If the water happens to be unwholesome in any situation, it becomes more wholesome if it is boiled with radishes. They are only injurious to the teeth. When boiled, they are an useful food to persons who spit blood. If a person previously eats radishes, and is bit by a scorpion, he not only will not die, but he will soon become convalescent. The radish being pounded and applied to wounds received from military<sup>c</sup> weapons, will very soon cure them. It

I 4

also

<sup>b</sup> Τῆς ἀνω κοιλίας, the upper belly. Κοιλία is used by Hippocrates sometimes to signify the cavity of the breast and the lower belly. The expression here used evidently means the stomach.

<sup>c</sup> Βαζανος in Greek, called *tormenta* by the Romans, were machines for discharging stones and missile weapons. Cæs. Bell. Gall. iv. 25.

also removes warts, and it restores the hair in the *alopecia*<sup>d</sup>; and when eaten by itself, it is of service to the breath,

### XXIII.—CONCERNING PARSLEY.

PARSLEY will grow large, if you take as much as your three fingers will hold, and tie it in an old cloth, then scattering some manure on it, you will immediately water it. Parsley will likewise grow very large, if, having dug round its roots, you throw some chaff over them, and water them. Parsley will also be curled, if its seed is gently pressed<sup>e</sup> and rolled, before it is planted. Parsley, when eaten, makes women more inclined to love; for which reason it is not proper to permit women giving suck to eat parsley, as it is very apt to keep back their milk. But it contributes to make the breath sweet; persons therefore having fetid breath, if they eat it, remove the disagreeable smell: and they say that persons on the stage eat it, that their breath may be sweet. Parsley, made into a cataplasm with bread, cures the erysipelas; and a decoction of it, taken after it has settled,

<sup>d</sup> Baldness. The term has been already explained.

<sup>e</sup> Pressed in a mortar, in the original.

settled, is good<sup>f</sup> for the stone; and it cures the dysuria<sup>g</sup>, and disorders of the kidneys;

#### XXIV.—CONCERNING MINT.

MINT is deemed to be of no use; for if it is applied to any wound, it is not easily healed; and if it is put in milk, and the rennet<sup>h</sup> is afterwards put in, the milk will not coagulate<sup>i</sup>. It is also ill calculated to raise the tender passions.

#### XXV.—CONCERNING GARDEN AND WILD RUE.

RUE is not partial to manure, but it likes warm and sunny situations; it is moreover proper to scatter some ashes over it in the winter, for, on account of the natural warmth of these, it resists the cold. But you ought to plant rue in earthen vessels: and it is proper to take care that a polluted female may not approach or touch it, for this is pernicious to it. If a person stops his ears with the tender pith of rue, he will cure the head.

<sup>f</sup> Causes stones to discharge, in the Greek.

<sup>g</sup> Difficulty of voiding urine.

<sup>h</sup> *HERRING*. It is probable this was made from some species of pine.

<sup>i</sup> Dioscorides mentions this, iii. 41. So does Pliny, xx. 14.



head-ache. The juice also of rue, mixed with the milk of a female and applied<sup>k</sup>, is good<sup>l</sup> for the eyes; and two parts of Attic honey, and one part of the juice of rue, being mixed and applied, remove dimness<sup>m</sup> of sight and cataracts<sup>n</sup> of men and animals; and the wild rue, being eaten and administered in a draught, has the same effect. The seed also of the wild rue, when taken in a potion for fifteen days, destroys a foetus<sup>o</sup>, for it is by nature inimical to women with child: and when taken with wine, it removes the pains and injuries of venemous beasts. When it is taken in a potion, it is likewise serviceable in epilepsies, and it removes pains in the thorax; and with wine or oil of roses, it purges<sup>p</sup> the ears.

## XXVI.

<sup>k</sup> Rubbed in.

<sup>l</sup> Bestows clearness of sight, is the Greek expression.

<sup>m</sup> In Greek called *αχλς*, sight diminished or abolished, from a dark barrier between the object and the retina.

<sup>n</sup> *Τροχους*, which Celsus calls *suffusiones*. Galen says, a cataract is a dryness or concretion of the crystalline humour.

<sup>o</sup> Embryo, according to the Greek. Hippocrates calls a child, in its third stage in the womb, by this appellation.

<sup>p</sup> i. e. clears from impurities.

## XXVI.—CONCERNING ROCKET.

THE seed of rocket drunk in wine, cures the bite of the *mus araneus*; it brings down the round<sup>a</sup> worms; it extenuates the pain of the spleen: when mixed with ox-gall and vinegar, it removes black scars; and it cures warts; and rocket mixed with honey removes spots in the face: when drunk with wine, it makes persons that are flogged feel less pain. Three leaves of rocket also, taken in the left hand, cure the jaundice. The rocket also, being sown near them, is of service to all esculent plants. The rocket likewise cures fetid smells of the arm-pits.

XXVII.—CONCERNING CARDAMON<sup>r</sup>.

THE seed of cresses mixed with bean-flour, a due portion of lixivium having been poured into it, cures the king's evil<sup>s</sup> and carbuncles<sup>t</sup>; but you are to make use of cabbage-leaves instead of linen<sup>u</sup>: and when taken in a potion with mint and  
wipe,

<sup>a</sup> By the Romans called *lumbrici*.

<sup>r</sup> In Latin, *nasturtium*. Cress.

<sup>s</sup> In Latin, *struma*, and *scrofula*.

<sup>t</sup> From *carbo*; crusty ulcers beginning with a pustule like a burn.

<sup>u</sup> For spreading the plaister.

wine, it discharges the round and the tape worms; when boiled with goats milk, it cures pains in the thorax: and when there is a suffumigation of it, it keeps off serpents. They say that persons who eat cresses are quick of apprehension. They are unfavourable to the tender passions. Taken with honey, they cure coughs: they are also applied to deep sinuous ulcers. The juice of them also prevents the falling of the hair. Applied with goose-grease, they cure small ulcers and scales in the head. With leaven, they bring boils to maturity. They also say that the juice of them, poured into the ears, cures the tooth-ache.

#### XXVIII.—CONCERNING SERIS, OR TROXIMA.

SERIS<sup>✓</sup>, that is, *troxima*<sup>✓</sup>, being dipt in vinegar and eaten, is good for the stomach. Its juice is of very great use to persons spitting blood, if it be drunk every other day. When pounded and laid under the left breast, it cures the cardiac<sup>✱</sup> passion:

✓ Succory.

✓ The Greeks gave it this epithet from its edible quality.

✱ This disorder is often mentioned by the ancients, and it is supposed to be what is now termed *syncope*. Cælius Aurelianus says, it has its name from the part affected, *i. e.* the heart.

passion: and the juice of it, when it has been a little dried in the sun, and then pounded, is given to persons having diseases of the liver: and if a person beholds it after the rising of the moon, and will swear by it, that he will not eat seris nor horse-flesh during thirty days, he will not have the tooth-ach.

### XXIX.—CONCERNING LEEKS.

Sorion recommends, after the leeks are sown, immediately to tread the bed and not to water it, but to let it lie neglected during three days, and to water it the fourth day; for thus they will be very beautiful. The leek will be very strong, if you mix sand with the mould in planting it. The leeks will be likewise large, if, when you transplant them, you lay a shell or a flat stone under them, and do not water them. They will also be large, if, when you transplant them, you prick the head of the leek in the middle, not with iron but with a peg\* or a reed, and lay in some of its seed; for the seed falling in is united, and it makes

\* Cornarius says, the first day after the rising, &c.

\* In Greek *κρηπίς*, which sometimes meant a weaver's shuttle, and sometimes the plectrum of the Romans, with which they played on the strings of musical instruments.

makes the leek swell. But some lay in, not its own but turnip seed, and it is united, and it becomes the cause of augmentation. But the leeks will be much larger, if you take some seed with your three fingers, and tie it in an old linen cloth, and then scatter some manure on it, and immediately water it; for all the seeds being united produce one large leek. The case is the same in respect of parsley. If a person also eat cumin before leeks, he will not smell offensively. If you also apply pounded leeks to the bites of venomous reptiles and of phalangia\*, you will more speedily cure them than with any other medicine. Boiled leek† also, administered with honey, usually cures all affections of the arteries; and its seed, drunk with sweet wine, cures the dysuria; but when it is constantly eaten, it hurts the sight, and it becomes injurious to the stomach. The juice of them‡ also being drunk with melioration€, contributes to cure persons bit by venomous beasts; and they themselves being applied as a cataplasm are useful. It being poured in with vinegar and olibanum, or with milk, or with oil of

\* The tarantula is a species of phalangium; Matth. lib. vi. c. 42.

† As in the Greek.

‡ Mixture of honey and water.

of roses, is of service to the ear-ache, and to noise in the head. It also cures the epinyctis<sup>d</sup>. It is proper to use leeks when reduced to a state of solution, for they are not less nutritious than flesh. This esculent is applicable to pains in the side.

### XXX.—CONCERNING GARLIC.

GARLIC grows very good in a light-coloured soil; and when eaten, it brings off the round worms, and it is good for making water; and applied in a cataplasm, and eaten, it is of service to persons bit by a viper, or by a mad dog. When they are also roasted<sup>e</sup> and wrought with honey, and applied, they cure the blood-shot<sup>f</sup> eye and the *alopekia*. They also stop the tooth-ache, being held in the mouth; and with oil and salt they cure pimples<sup>g</sup>. They also remove warts and the lichen. Garlic, when boiled, and eaten raw, is of service to inveterate coughs; and if a person previously

<sup>d</sup> A pustule which rises in the night; Celsus says it is of a bad kind, of a white or livid colour, with a violent inflammation.

<sup>e</sup> Burnt, in the Greek. Transition as in the original.

<sup>f</sup> In Greek called *υμωρια*.

<sup>g</sup> *Εξανθηματα*; such as elevate the skin and look florid.

previously eats garlic, he will be unhurt by serpents and other poisons; and when pounded and laid on, it cures persons who have been stung by serpents. When taken in a potion with wine, it is of consummate use. It is also of great service to persons who cannot digest their food. It is diuretic; it cures diseases of the kidneys, and it keeps off injury from unwholesome water. But if you wish your plants to be of a better flavour, set them when pressed. One sort of the garlic is mild, and raised in the garden; the other is wild, which they call the serpent-garlic<sup>b</sup>; and the wild sort is more adapted to the cures that have been mentioned, than the mild one. You will bring your garlic to a grateful smell by throwing in some refuse<sup>c</sup> of your olives when you plant them; and they will be free from offensive smell, if they<sup>d</sup> are planted and taken up when the moon is under the horizon. Some also say that they are less offensive, if a person chews a raw bean immediately after eating them.

## XXXI.

<sup>a</sup> So called, because it cured persons stung by serpents.

<sup>c</sup> Kernels, in the original.

<sup>d</sup> *Σπυγνία*; this word is used for planting as well as sowing, as the Roman word *sero*.

XXXI.—CONCERNING ONIONS.

WHEN you transplant onions, take off their lower and their upper ends, and they will grow large: and twenty days before you transplant them, dig the ground, and let it be dry, that it may be free from all moisture; then plant them, and they will be much larger. If you also trim<sup>1</sup> their heads and set them, they will be the larger: and when planted in a red-coloured soil, they will be good as garlic in a white soil. But that onions may keep sound, put them in warm water, and dry them in the sun; and when they are dried, lay them in barley-straw, not touching one another. Onions, being pounded with honey, are proper to be applied to every wound; and a person who takes some choice onions every day, and eats them with honey fasting, will pass his days in good health. An onion indeed will cure a wound; but if garlic be applied to the body in a sound state, it will form an ulcer. Onions, rubbed in with vinegar in the sun, cure the disorder called *al-  
phus*<sup>2</sup>; and, when pounded, they speedily cure the *alopekia*: and their juice is of service to ears that

VOL. II.

K

suppurate;

<sup>1</sup> Take off the external coats.

<sup>2</sup> A sort of white leprosy, called by the Romans *vitiligo*.



suppurate; and when rubbed in, it is of use in the quinsy: and the onion is also of utility to dimness<sup>a</sup> of sight; and when roasted and administered, it cures a cough.

### XXXII.—CONCERNING CAUCALIS.

CAUCALIS<sup>o</sup>, being eaten, cures nephritic complaints by its diuretic power; and the water of it, drunk with sweet wine an hour before going into the bath, cures persons having the jaundice, by sweating; and being eaten with oxymel<sup>p</sup>, and thrown up, it clears the stomach; and it cures the atrabilis<sup>q</sup>, and loss of appetite, and the quartan fever.

### XXXIII.—CONCERNING PULEGIUM.

PULEGIUM<sup>r</sup> promotes digestion, being pounded when dry, and taken after eating: and being masticated

<sup>a</sup> *Αφθυσια*, which has been already explained.

<sup>o</sup> The Italians call this *caucalide*, and *petrosello salvatico*, i. e. wild parsley.

<sup>p</sup> Galen has left a prescription for making oxymel, lib. iv.

<sup>q</sup> Black bile, or melancholy. Dr. Cullen describes it, 1029.

<sup>r</sup> Pennyroyal.

ticated and applied to the eye-lids, it cures the opthalmia<sup>a</sup> in the height of the disease; so that a person that has tried it, would use this for the eyes in preference to the most approved collyria<sup>t</sup>.

#### XXXIV.—CONCERNING ANETHUM.

ANETHUM<sup>u</sup> being eaten, hurts the sight.

#### XXXV.—CONCERNING SISYMBRIUM.

THE skimbron, which some call *sisymbrium*<sup>v</sup>, promotes appetite, and it is diuretic; and it likes a temperate and dry air, and a situation well laid to the sun, by no means incumbered with trees; and it is raised in mould, and it grows. It is sown and planted; but when sown indeed, it will produce seed the third year; but if a person will plant it from the top of the root, from which he has the shoot, which some call the eye, it will produce seed<sup>w</sup> the first year.

K 2

XXXVI.

<sup>a</sup> Book ii. c. 18.

<sup>t</sup> Medicines for the eyes.

<sup>u</sup> Dill.

<sup>v</sup> Matthioli enumerates six species of this plant; lib. ii. 121.

<sup>w</sup> Τοῦ καπνῶν.

## XXXVI.—CONCERNING BULBS.

BULBS\* will be large, if, as with regard to leeks, shells are set under the roots of them when they are planted. The bulbs are indeed planted from the calends of November to the calends of February.

## XXXVII.—CONCERNING SQUILL.

THE flower of the squill† growing like a red, and not speedily withering, portends a fruitful season.

## XXXVIII.—CONCERNING LAPATHUM.

THE seed of the wild lapathum‡, taken with wine, cures the cardiac passion and the dysentery;

\* The Greeks had two plants, which were denominated *βολβος εδαδιμος* and *βολβος αματικος*. The first is mentioned by Galen, who points out many of its properties; lib. vi. The second is sometimes called *muscaris*. The epithet *bulbous* was most probably borrowed from these plants; Matth. ii. 165, 166.

† Sea-onion.

‡ *Rumex*; Matth. lib. ii. 108.

tery; and, being tied round the left arm, it cures sterility in women. The root of the wild lappathum also cures the jaundice and the dropsy: and, being boiled with vinegar and applied, they say it cures the leprosy, and the lichen, and the vitiligo.

### XXXIX —CONCERNING ARTICHOKEs.

PLANT artichokes<sup>a</sup> in the month of November, for, being then planted, they will come<sup>b</sup> to perfection in the spring: but when planted in the spring, they will hardly come to perfection the same year, and they will be weak, and the edible<sup>c</sup> part small. But take the plants of the artichokes which grow on the large stems, cutting them with a sharp knife, having first dug the circumjacent soil, and take some part of the root

K §

along

<sup>a</sup> Theophrastus says that the species here mentioned, *κινάρα*, was the Sicilian *καστός*, artichoke, and he says it did not grow in Greece. The Greek artichoke was called *σκολιμος*.

<sup>b</sup> “ Will produce fruit,” is the Greek expression; which, although forcible, and to which Athens and Rome gave currency, I did not think myself justified to use, because it might not seem to be exactly adapted to the peculiar taste of the English tongue.

<sup>c</sup> The fruit, in the Greek,

along with them; and set the plants in well-wrought mould, scattering some old compost over them; and water them regularly in the summer; for thus you will have the edible part tender, and of a better size. You will also make your artichokes well flavoured, if you macerate their seed in the juice of roses, or of lilies, or of the bay, or of any other savoury plant, during three days, and so set it. You will also make artichokes grow without prickles, if you rub the points of the seeds against a stone. Some indeed affirm, that, at what time soever artichokes are planted, they will come to perfection at the same time; and that on this principle you may have artichokes all the year. You will raise artichokes<sup>d</sup> having the flavour of the bay, if you take the seed of the bay, and, having perforated it, set the seed of the artichoke in the hole, and so plant them. They also grow without prickles, if, having decorticated the root of a lettuce, and having cut it into small pieces, a seed is set in each of the pieces, and so planted. Mice are very apt to eat the roots of artichokes, and they resort to them from a considerable distance; but we shall keep them off by wrapping the roots in wool, or by laying hogs dung, or ashes of the fig-tree, on the

<sup>d</sup> Called bay-artichokes, in the original.

the roots, either from a natural antipathy, or from an aversion to the smell. You will also raise artichokes of a sweet flavour, by macerating the seed in milk and honey, and sowing it when dry.

#### XL.—CONCERNING PURSLANE.

PURSLANE, applied as a cataplasm, stops the erisipelas: and a leaf of it laid under the tongue, makes persons less thirsty.

#### XLI.—THE RAISING OF MUSHROOMS.

Cut down a black poplar; and, having reduced some leaven into a state of solution with water, pour it on the part of the stem that is cut, as it lies on the ground, and mushrooms<sup>f</sup> will be soon raised. But if you wish to raise mushrooms from the soil, choose a mountainous situation, a rarefied soil, that has been used to produce mushrooms;

K 4

\* Pliny says the same thing, xx. 20.

<sup>f</sup> The poplar mushrooms, in the original. Dioscorides prescribes a method of raising mushrooms from the white and black poplar; lib. i. c. 109. Pliny has also transmitted his thoughts on this subject; xxii. 23. Nicander, in his Georgics, is said to have given the preference to mushrooms raised from fig-trees; Athen. p. 61.

rooms; and heap up dead shoots, and all things of a combustible nature; and when you see the air clouded, as if a shower is impending, set fire to them; for thus mushrooms will be spontaneously produced. But if a shower is not coming forward when you begin to make your pile, besprinkle the places where the fire is made, with consecrated and clean water, in imitation of a shower, and mushrooms will be raised, although of inferior kind; for those are better that are cherished by showers.

BOOK

## BOOK XIII.

### HYPOTHESIS.

These things are in this Book, being indeed the Thirteenth of the Select Precepts of Agriculture, and comprising the order of locusts, and of the bruchus, and of scorpions, and of serpents, and of such venomous animals; and a cure also for the fly, and for bugs, and for small flies, and for other noxious animals of the kind.

#### I.—CONCERNING LOCUSTS.

**M**ANY things have indeed been mentioned by the ancients to drive away locusts, but I select and prescribe such things as are more readily done. If a cloud of locusts is coming forward, let all persons remain quiet within doors, and they will pass over the place: but if they suddenly arrive before they are observed, they will hurt nothing, if you boil bitter lupines, or wild cucumbers, in brine, and sprinkle it, for they will immediately die. They will likewise pass over the subjacent spot, if you catch some bats, and tie them on the high trees of the place: and if you take and burn some of the



the locusts, they are rendered torpid from the smell, and some indeed die, and some drooping their wings, await their pursuers, and they are destroyed by the sun. This is a natural cause; for if you take a scorpion and burn it, you will also take the rest, or you will chase them to flight: and it is the same in respect of ants, as experience has taught us; and the same thing happens also with regard to other animals of this kind. You will drive away locusts, if you prepare some liquor from them, and dig trenches, and besprinkle them with the liquor; for if you come there afterwards, you will find them oppressed with sleep; but how you are to destroy them is to be your concern. A locust will touch nothing, if you pound absinthium, or a leek, or centaury with water, and sprinkle it.

## II.—CONCERNING THE BRUCHUS.\*

SET three grains of mustard around the stem of the vine at the root; for these being thus set have the power of destroying the bruchus.

## III.

\* A species of locust. It is mentioned in Leviticus, xi. 22.

### III.—CONCERNING WEASELS.

**MACERATE** sal ammoniac and wheat together, and scatter these in the places where they frequently resort; for, when they eat them, they will either die, or they they will betake themselves to flight. They also say, if a person catches one of them, and cuts off its tail, or the testes, and lets it escape alive, they will not in future be found in that place.

### IV.—CONCERNING DOMESTIC MICE.

**MICE** are killed with hellebore put in barley meal; or with the seed of wild cucumbers with black hellebore, and colocynthis<sup>b</sup>, and barley-meal.

✓ **Suffumigation** of calacanthus<sup>1</sup> and origanum, and of parsley-seed and of melanthium<sup>k</sup>, will drive them away: and if you lay some oak-dust at the hole, they become scabby and die, when covered with the dust. If you mix the filings of iron with leaven, and lay it where they abound, they perish when they have eaten it. If you also wish to make mice  
lose

<sup>b</sup> Called by the Spaniards and Italians *coloquintida*. Matth. iv. 171.

<sup>1</sup> Supposed to be the same as *glaucium*, which grows in Syria. Its leaves are like those of the horned poppy. Diosc. lib. iii. c. 100.

<sup>k</sup> By the Romans called *nigella* and *gith*. Matth. iii. 78.

lose their sight, pound some tithymallus<sup>1</sup>, and mix it with barley-meal and ænomel, and lay it for them; for, when they eat it, they become blind. Anatolius and Tarentinus, in their treatise on the granary, have prescribed the same medicaments for the destruction of domestic mice. If you also catch one, and excoriate its head, and let it go, the others will betake themselves to flight: and when they eat the root of bramble with butter and bread and cheese mixed, they die. But some pound and sift white hellebore and the bark of the cynocrambe<sup>m</sup>, and make them into a mass, and set it in the holes. Mice will be driven away by a suffumigation of the hæmatites<sup>n</sup> and the green myrtle. Anatolius says, if you put some amurca in a brazen dish and set it in the middle of the house in the night, you will bring all the mice together. In other respects, his sentiments are the same as those of Didymus.

#### V.—CONCERNING FIELD MICE.

APULEIUS recommends to smear seeds with ox gall, and the mice will not touch them; but it is better

<sup>1</sup> Spurge. In Spanish, *lechetrezna*. Matth. iv. 159.

<sup>m</sup> Sometimes called *brassica canina*, wild Mercury. Matth. iv. 184.

<sup>n</sup> *Hæmatites*. Matth. l. v. c. 101.

better to pound in the dog-days, the seed of hemlock with hellebore, and to mix it with barley-meal; or seed of the wild cucumber, or of the hyoscyamus,<sup>o</sup> or of bitter almonds with black hellebore, and to mix it with an equal quantity of barley-meal, and to mix it up with oil, and to lay it near the holes of the field-mice; for when they eat it, they die. But persons in Bithynia, who have tried the experiment, stop the holes with rhododaphne,<sup>p</sup> so that they, endeavouring to get out, gnaw it, and thus they perish. Take some paper and write these words on it: "I<sup>q</sup> adjure the  
 " mice taken in this place, that you do me no  
 " injury yourselves, nor suffer another to do it;  
 " for I give you this ground (and you mention  
 " which); but if I again take you on this spot, I  
 " take the mother of the Gods to witness, I will  
 " divide you into seven parts." Having written these words, fasten the paper in the place where the mice are, before the rising of the sun, to a stone of spontaneous production, and let the letters be turned externally. This is written by me, that  
 I may

<sup>o</sup> Henbane. Matth. iv. 64.

<sup>p</sup> Sometimes called *rhododendrum* and *nerium*. Galen mentions its poisonous quality, lib. viii.

<sup>q</sup> The form of this exorcism seems to be of oriental extraction.

I may not seem to omit any thing; but I do not receive all these things, far be it from me, and I advise all to do the same, so as not to have recourse to any ridiculous things of this kind.

## VI.—CONCERNING THE CAT.

A CAT<sup>r</sup> does not touch a fowl, if some wild rue be tied under its wing.

## VII.—CONCERNING MOLES.

If you wish to destroy moles, pound and sift some white hellebore and the bark of the cynocrambe, and macerate them with barley-meal and eggs in wine and milk, and you are to make them into pellets<sup>s</sup>, and you are to set them in their holes. Or put some chaff, and a sufficient quantity of the gum<sup>t</sup> of cedar and brimstone in a walnut-shell, or in some small vessel; and in the place which the mole inhabits, be sure to stop all

<sup>r</sup> The juice of rue is recommended for this purpose by Dioscorides, lib. iii. 52.

<sup>s</sup> Mass, in the original.

<sup>t</sup> The sap of the cedar was deemed to be of singular efficacy in preserving dead bodies among the Greeks, for which reason it is called by Dioscorides *μαζον ζων*.

all the small holes, that the smoke may not find its way through them, but through a larger one, through which there is a currency of air, set in the bottom of the nut; and having properly adapted it to the hole, blow in the smoke, that all the smell of the gum of cedar, and of the brimstone, may be driven in and suffocate the mole; and so go round the harbour of each mole; and having done this, you will destroy them all.

#### VIII.—CONCERNING SERPENTS.

THERE will be no serpents in a place, if you plant absinthium, or artemisia<sup>a</sup>, or abrotonum, round the villa: and you will drive away those that are there, if you make a suffumigation with the root of the lily, or with hartshorn, or with the hoofs of goats<sup>v</sup>. You will also drive away every reptile, if you pound and mix the juice of laserpitium, and nigella, and galbanum, and hartshorn, and hyssop, and sulphur, and pyrethrum<sup>w</sup>, and the hoofs of a goat, and then make them quite fine, and pour some vinegar on them, and

<sup>a</sup> Mugwort. Matth. iii. 111.

<sup>v</sup> Goats hair was also recommended. *Archigenes apud Ætium*, l. i.

<sup>w</sup> Pellitory of Spain. It acquired its original name from the heat of its root. Matth. iii. 71.

and make them into small pellets, and make a suffumigation of them: and each of them, when fumigated, drives away reptiles. Some also say that a branch of the pomegranate keeps off venomous animals, and for this reason they think proper to fix it on common coverlids for the sake of security. Serpents also will not infest a pigeon-house, if you write Adam\* on the four corners; and on the windows, if there are any. But Democritus says that a serpent does not stir, when a feather of the ibis' is thrown at it, and that it dies when leaves of the oak are thrown upon it, and when a person fasting spits\* into its mouth. Apuleius also says that  
a serpent

\* The Sybilline Oracle said, that God formed this word, and that it referred to the four quarters of the world, each letter alluding to one of them. *Ανατολη, Δυσις, Αφρος, Μομφρα.* *ادم*, in the eastern languages, signifies Adam, or the first of the human race; and he is said to have acquired this appellation from the colour of the earth, of which God formed him. Many of the fanciful vagaries of the Greeks derive their origin from the east; and although the Sybilline Oracle so expediently perverted the meaning of this word, it must be evident that he was indebted to that country for the groundwork of his ingenious conjecture.

† This is mentioned on another authority. *De sympath. et antipath.* Fabric. B. G. T. iv. p. 337.

\* Pliny says the same thing, xxviii. 4.

a serpent being *once* struck with a reed, becomes torpid; but many times, that it acquires strength. If a person lays hold of the tail of a serpent going into its hole with the left hand, he will easily draw it out, but with his right hand he has not that power; for when drawn back it does not comply, but it either makes its escape, or it will be cut off. Tarentinus likewise says, that a serpent does not approach a person who is smeared with the juice of the plant *dracontia*<sup>a</sup>, nor such persons as are rubbed with the juice or the seed of the radish; and, if they only carry them, that they are not injured; and that the root of the rose-tree saves persons bit by serpents. Florentinus says that a serpent does not approach a place where there is the fat of a stag, or the root of centaury, or *gagates*<sup>b</sup>, or the herb *dictamnus*<sup>c</sup>, or the fæces of an eagle, or of a kite; and being mixed with *styrax*<sup>d</sup>, and a suffumigation being made, they drive away serpents. Give persons bit by serpents the juice of the leaves of

VOL. II.

L

the

<sup>a</sup> Called *dracunculus* and *serpentaria*. Matth. ii. 160 and 161.

<sup>b</sup> Matthiolus says that it burned with facility, and that it had the smell of bitumen; l. v. c. 103.

<sup>c</sup> Now called *fraxinella*; Matth. iii. 31, &c.

<sup>d</sup> Called *storax*; Matthiol. l. i. c. 68.



the ash to drink, those that have no fever indeed with wine, and such as have a fever with well-tempered wine, and having pounded the leaves, apply them to the wound. Apply the root of the alicacabus\* to an asp, and it will make it sleepy. Pound tribulus† with water, and set the tribulus in the hole, and you will drive away the serpents. If jars, that had salted things in them, be buried in the ground about the villa, every reptile will get into them; but having carefully covered them, you are to burn them on the outside of the boundaries.

#### IX.—CONCERNING SCORPIONS‡.

IF you take a scorpion and burn it, the others will betake themselves to flight: and if a person carefully rubs his hands with the juice of radish, he may without fear and danger take hold of scorpions, and of other reptiles: and radishes laid on scorpions, instantly destroy them. You will also cure the bite of a scorpion, by applying a silver ring to the place. A suffumigation of sandarach

\* Pliny mentions this, xxi. 31.

† *Caltrops*. Diosc. attributes the same power to it, iv. 15.

‡ *Io Rhodius ad. Scrib. Largum*, 164, p. 244, has made many observations on these animals.

sandarach<sup>a</sup> with galbanum, or goats fat, will drive away scorpions and every reptile. If a person will also boil a scorpion in oil, and will rub the place bit by a scorpion, he will stop the pain. But Apuleius says, that a person bit by a scorpion sits on an ass, turned towards its tail, and that the ass suffers the pain, and that it is destroyed. Democritus says, that a person bit by a scorpion, who instantly says to his ass, "A scorpion has bit me," will suffer no pain, but it passes to the ass. The newt has an antipathy to the scorpion: if a person therefore melts a newt in oil, and applies the oil to the person that is bitten, he frees him from pain. The same author also says, that the root of a rose-tree being applied, cures persons bit by scorpions. Plutarch recommends to fasten small nuts to the feet of the bed, that scorpions may not approach it. Zoroastres says that lettuce-seed being drunk with wine cures persons bit by scorpions. Florentinus says, if one applies the juice of the fig to the wound of a person just bitten, that the poison will proceed no farther; or if the person bit eat squill, he will not be hurt, but he will say that the squill is pleasant to his palate. Taren-

L 2

tinus

<sup>a</sup> The red arsenic of the Greek was called by this name, Matth. v. 81.

tinus also says that a person holding the herb *sideritis*<sup>1</sup> may take hold of scorpions, and not be hurt by them.

#### X.—CONCERNING ANTS.

If you take some ants and burn them, you will drive away the others, as experience has taught us. If you pour the gum of cedar over their haunts, ants will not come to your threshing-floor; ants will not touch a heap of corn, if you will scatter some chalky mould around the heap, or lay some wild *origanum* around it. You will also drive ants out of their haunts, if you burn the external coverings, that is, the shells of fish, with *styrax*, and having pounded them scatter them on their haunts. You will likewise drive away ants by pounding *origanum* and sulphur, and by scattering it round their haunts. Ants will be sure to perish, if you dissolve *Cyrenaic laserpitium* in oil, and pour it on their haunts. Ants will not touch plants, if you smear their stems with bitter lupines pounded with *amurca*, or with asphaltos pounded or boiled with oil. Ants will not touch a vessel with honey, although the vessel may happen to be without its cover, if you wrap it in white wool, or if you scatter

<sup>1</sup> See Matthiol. l. iv. c. 29, 30, 31.



called *coracineus*<sup>m</sup> from a tree, and destroy the ants.

# XI.—CONCERNING GNATS.

HORSE-HAIR stretched through the door, and through the middle of the house, destroys gnats: and a suffumigation of *calacantha*<sup>n</sup> and *nigella* will not permit them to enter, and it will drive them out of the house. If you also soak a sponge in sharp vinegar, and apply it to your head, and lay it under your feet, gnats will not touch you. You will likewise drive away gnats, by soaking rue, and sprinkling the house, and by boiling conyza, and sprinkling the house with the decoction; or by making a fumigation of galbanum, or of sulphur, or of cumin. If you also lay a sprig of green hemp in blossom near you, when you are going to sleep, gnats will not touch you: and they will not approach you, if you rub yourself with manna, and vinegar and oil. They will likewise betake themselves to flight, when a smoke is raised from the sediment of vinegar and *origanum*. A suffumigation of  
 cow-dung,

<sup>m</sup> This fish is mentioned by Martial, l. xiii. 85. *Princeps Niliacis raperis, coracine, macellis, &c.*

<sup>n</sup> *Syrian glaucium*, c. iv. of this Book.

cow-dung, and the application of it under the walls, will drive away the gnats : and if the upper garments be fumigated with one ounce of eli-campane, two ounces of ammoniac, two ounces of styrax, two drams of burnt shells<sup>o</sup>, they will betake themselves to flight. If a sponge soaked in vinegar be hung from the ceiling, it will bring thither all the gnats. Gnats will not torment a person in bed, when there is hemp laid under him. Soak rue in water, or boil conyza and sprinkle the house, and this will drive away the gnats. A fumigation of bdellium<sup>p</sup> also drives them away.

## XII.—CONCERNING FLIES.

BAY pounded with black hellebore, and with milk, or with sweet wine, or macerated in hydromel, or in water, and sprinkled, kills flies: and if you pound cassia with oil, and rub yourself with it, they do not approach<sup>q</sup> you. But if you wish to drive them away, make a suffumiga-

L 4

tion

<sup>o</sup> The original specifies the shells of *murices*.

<sup>p</sup> A gummy resinous juice of an eastern tree is in modern times brought into Europe from Arabia, and from the East Indies, under this name. See Matthiol. l. i. c. 69.

<sup>q</sup> Come upon you, in the Greek.

tion of calacantha. A decoction likewise of the leaves of elder being sprinkled, drives them away. But Anatolius says, if you wish to make them assemble in one place, make a trench, and pound rhododaphne, and pour it in, and you will bring them thither all together. Flies also will not infest cattle, if you boil the seed of bay with oil, and rub them with it: and flies never rest on dumb animals, if they are rubbed with the fat of a lion. Hellebore also, with arsenic<sup>1</sup>, macerated in milk, or in sapa, and besprinkled, kills flies: and if you pound and rub on alum and origanum, they will not settle where this is done.

### XIII.—CONCERNING BATS.

SUSPEND leaves of the plane-tree in their way, and they will not make their approach. A fumigation of ivy destroys bats.

### XIV.—CONCERNING BUGS.

TAR and the juice of the wild cucumber applied to the bed, destroys bugs; and so does squill, when

<sup>1</sup> *Συρ ἀρσενίς*. The arsenic of the Greeks, was what the Romans called *auripigmentum*, whence its modern name of *orpiment* seems to be derived. Matth. v. 80.

when cut in pieces and pounded with vinegar, when the bed is rubbed with it. Boil likewise the leaves of citrons with oil, and rub the joints of the beds with them; and mix bulls or goats gall with sharp vinegar, and apply it to the bed and to the walls: and this answers the end, if you pound stale oil and sulphur vivum, and rub the bed with them: and there will be no bugs, if you rub the beds with boiled glue<sup>r</sup> of fish. You will also destroy your bugs, if, having boiled amurca with bullocks gall, you mix it with oil, and sprinkle it over them: or you will rub the beds with leaves of the ivy, or of the capparis<sup>r</sup>, pounded with oil, and this being applied, destroys bugs on walls. An efficacious medicament is also thus prepared: an acetabulum<sup>r</sup> of staphis-agria<sup>r</sup>, and an equal quantity of squill, cut in thin pieces, and a spoonful of sharp vinegar, are pounded together, they are then heated, and so the place is smeared: and you will mix one part of the gum of cedar, and four parts of sweet wine,

<sup>r</sup> Pliny mentions this glue, xxii. 7. So does Dioscorides, l. iii. c. 102. Matthiolus gives an account of it, iii. 86.

<sup>r</sup> The caper bush now goes under this name.

<sup>r</sup> A little more than  $\frac{1}{8}$  of an English wine pint.

<sup>r</sup> Called *uva sylvestris*, et *herba pedicularis*. Matth. iv. 150.



wine, and apply it. The gall of a goat or of a calf, and an equal quantity of white wine with vinegar, will have the same efficacy. Florentinus says, that a suffumigation of bugs destroys leeches, and that leeches destroy bugs, when the coverlid is laid on so that the unsavoury fumigation may not find its way through it: and a scolopendra<sup>v</sup> being dried, and a suffumigation being made with it, has the same power; and so have the leaves of ivy, and ten leeches, when they are pounded. But Democritus says, that the feet of a hare, or of a stag, hung round the feet of the bed, at the bottom of the couch, does not suffer bugs to breed: but in travelling, if you fill a vessel with cold water, and set it under the bed, they will not touch you, when you are asleep: or the pouring down of hot water, which all persons practise, indeed thoroughly destroys them, where you meet with them; but it is no preventive to a speedy reproduction of them.

#### XV.—AGAINST FLEAS.

MAKE a trench, and pound rhododaphne, and throw it in, and they will all resort there: and  
absinthium,

<sup>v</sup> There is a land and a sea animal of this denomination. Matth. ii. 14, and vi. 43.

absinthium, or the root of the wild cucumber, soaked in sea-water, and poured on, destroys them. Melanthium, also soaked in water and poured on, totally destroys them; or a decoction of the root of conyza sprinkled over them. The seed also of mustard and rhododaphne being both boiled and sprinkled over the house, likewise destroys them. Having sifted quick lime, scatter it over the place, after you have swept it, and it kills them; and so does amurca, when constantly poured on the paved floor: and by pounding and mixing with water some wild cumin, and putting in water ten drams of the seed of the wild cucumber pounded, and sprinkling it over the house, you will destroy the fleas. Or the root of absinthium and of the wild cucumber macerated in water, or the root of chamæleæ<sup>▼</sup>, and the leaves of the black poplar pounded and macerated in water, or tribulus boiled in water, will do it. Strong<sup>\*</sup> brine and sea-water being sprinkled, also destroys them. If a person also sets a dish in the middle of the house, and draws a line around it with an iron sword, and it will be better if it has done execution, and if he sprinkles the rest of the house, excepting the place circumscribed, with an irrigation of  
of

▼ Sometimes called *oleastellum* in Latin. Matth. iv. 166, 167.

\* Sharp brine, in the Greek.

of staphisagria, or of pounded leaves of the bay-tree, they having been boiled in brine or in sea-water, he will bring all the fleas together into the dish<sup>7</sup>. A jar also being dug in with its edge even with the pavement, and smeared with bulls fat, will attract all the fleas, even those that are in the wardrobe<sup>8</sup>. If you enter a place where there are fleas, express the usual exclamation of distress, and they will not touch you. Make a small trench under a bed, and pour goats blood into it, and it will bring all the fleas together, and it will allure those from your habiliments. Fleas may be removed from the most villous and from the thickest pieces of tapestry, whither they betake themselves when full, if this<sup>9</sup> is set in a vessel or in a cask.

#### XVI.—CONCERNING CANTHARIDES.

CANTHARIDES will not hurt the vines, if you macerate some in oil, and apply it to the whetstone on which you are going to set your pruning-knives: and if you burn galbanum with stale cow-dung, you will drive them away: and  
if

<sup>7</sup> There is in this place a mutilated part of a sentence in the Greek.

<sup>8</sup> In the clothes, in the Greek.

<sup>9</sup> Goats blood.

if you make a fumigation of the roots of the wild cucumber, you will force them away. Aristotle also says, that the smell<sup>b</sup> of roses kills canthari, and that the smell<sup>c</sup> of perfume destroys vultures; for they say, that sweet smell is disagreeable to them. But many encompass the stems of vines, towards the ground, with a chaplet of ivy, and they find them under the shade of the ivy, and they destroy them.

#### XVII.—FOR LEECHES.

IF an ox, or other quadruped, swallows a leech in drinking; having pounded some bugs, let the animal smell them, and he immediately throws up the leech.

#### XVIII.—CONCERNING FROGS.

FROGS will desist from croaking, if having lighted a candle you set it on the bank.

<sup>b</sup> This is mentioned by Clemens Alexandrinus, *Pædagog.* lib. ii.

<sup>c</sup> See Pliny, lib. xi. 53. *Ælianus Hist. Animal.* lib. iii. 7. Aristotle, vol. 1, p. 1166, of the Du Val edition.

## BOOK XIV.

### HYPOTHESIS.

These things are contained in this Book, being indeed the Fourteenth of the Select Precepts on Agriculture; and comprising an arrangement in relation to the breeding and care of pigeons and of birds, of the aërial and terrestrial tribe, according to the information given in the subsequent chapters.

#### I.—CONCERNING PIGEONS.

**T**HE raising of pigeons is of consummate utility to persons engaged in agriculture, chiefly on account of the advantage of their dung, and on account of young pigeons being necessary to the recovery of persons from illness: and the raising of them is attended with no small profit; for they are fed during two of the winter months only, and the rest of the year the bird gets its own sustenance out of doors in the fields. The bird is also naturally prolific; for every forty days it sits and hatches, and cherishes and brings up

up its young; and it does this nearly all the year: and it only ceases from the winter solstice to the vernal equinox; but the rest of the year it breeds, and you will see pigeons, whose young are not perfectly brought up, laying and sitting: and their young, when come to perfect growth, begin to lay with those that bred them. The bird indeed loves for its food the chicheling<sup>d</sup> vetch, the orobus, fenugreek, peas, lentils, wheat, and darnel<sup>e</sup>, which has affinity to it. But you are to hinder them from going abroad, lest they breed in another place, and lest they be allured by thus getting out; but let them be employed in raising their young, without suffering from hunger. If they at any time want food, you are only to let out those that have young ones; for they, when satisfied, soon return, bringing sustenance to their young.

**II.—THAT PIGEONS MAY NOT BETAKE THEMSELVES TO FLIGHT, BUT THAT THEY MAY BE PROMPTED TO BREED.**

**SMEAR** the doors and the windows, and the corners of the pigeon-house, with oil of opobalsamum,

<sup>d</sup> By the Greeks called *λathuros*.

<sup>e</sup> *Ζίζανον*.

samum<sup>f</sup>, and the pigeons will settle: and pigeons will not fly away, if you macerate cumin and lentils in melicraton<sup>g</sup>, and throw them to them: and if you give them melicraton to drink, or if you boil lentils by themselves in sweet wine, and permit them to eat them, you will prompt them to breed. This potion<sup>h</sup> is also prepared, that pigeons may not fly away: shells pounded and sifted, and costus, and old well-flavoured wine, mixed together, are brought to them, before they are going out to feed: and some having well-wrought barley-meal boiled with dried figs, and having added a due proportion of honey, set it before them; others carry them cumin before they go out to feed. Pigeons will settle, if you fix the head of a bat on the tower; or if you deposit branches of the wild<sup>i</sup> vine with their blossoms in the pigeon-house, in the season, when they blow.

### III.

<sup>f</sup> Matth. i. 18.

<sup>g</sup> A kind of mead, whether boiled or not.

<sup>h</sup> Love-potion, in the Greek.

<sup>i</sup> *Λύμας αμπελιν.*

### III.—THAT PIGEONS MAY SETTLE, AND THAT THEY MAY ALLURE OTHER STRANGE PIGEONS TO THEM.

IF you rub pigeons with muron\*, they will allure others in the neighbourhood: and if you throw cumin before them, when they are going out to feed, you will also make many others come with them, being induced by the smell of the cumin: and if you take the seed of the vitex<sup>1</sup>, and macerate it in old wine, during three days; and then take vetches<sup>m</sup>, and macerate them in the wine, and throw them to the pigeons, and immediately let them fly; the neighbouring pigeons, from the fragrant smell, will all come into the dove-cote. You will also make the pigeons enter with facility, if you make a fumigation in the pigeon-house with sage<sup>n</sup> and rosemary.

\* By the Romans called *unguentum*; Matth. i. 41. This practice is noticed by many writers; Basil, M. Epist. clxxv. p. 957, Paris; Selden *de Jur. Nat. et Gent. Hebr.* 4; 5, 6, 9. He says that persons who practised this art among the Jews were not less infamous than thieves and gamblers.

<sup>1</sup> *Avyos*, or *agnus castus*; Matth. i. 116.

<sup>m</sup> Of the sort called *orobus*; in Latin *eroum*, i. e. the bitter vetch.

<sup>n</sup> The Greek points out the larger kind.



## IV.—THAT A CAT MAY NOT WORRY PIGEONS.

LAY and hang sprigs of rue in the windows and in the door-way of the pigeon-house, and in other places in it, for rue has a certain antipathy to noxious animals.

## V.—THAT A SERPENT MAY NOT GET INTO THE PIGEON-HOUSE.

SERPENTS will not infest a pigeon-house, if you inscribe the word *Adam* on the four corners of it, and, if it has a window, on that also. You will also keep off serpents, if you make a fumigation of peucedanum<sup>o</sup>.

## VI.—CONCERNING THE PIGEON-HOUSE.

It is proper to build the house in fine weather, and to secure it against the ingress of noxious animals, and to plaster it with care: and it is proper to make many holes in the walls, from the pavement to the top, which some call pigeon-holes,

<sup>o</sup> Hog's fennel. The Greeks gave it the name of *σεννδα*, because its leaves resemble the leaves of the pine; Matth. iii. 77.

holes<sup>p</sup>, but we give them the name of roundish cells, in which the pigeons in pairs are to settle and to breed; and you are to set before each hole a tablet, that they may get in by means of it: and you are to make them a good place for washing in the house, that they may drink and clean themselves; and that the man, under the pretence of giving them water, may not perpetually disturb the pigeons, which is consummately hurtful. But you are not totally to exclude a man from getting in, for it is necessary now and then to sweep the house, and to take away the dung; and if any thing is amiss within, to set it right, that neither serpents nor other reptiles may prove injurious to the pigeons. I indeed, wishing to preclude the access of reptiles, made choice of a proper situation, having no buildings near, but standing at a distance; and I carried columns in proportion to the size of the work that was going to be raised; and I set these, not in a straight line, but circularly: I then set capitals on the columns, and afterwards stone columns on the capitals; but

M 2

for

<sup>p</sup> Λοτίνες καλῶς σηκὺς ημεῖς δι' κυδρίνας ονομαζόμεν. Σηκος means sometimes a place where an animal settles: and it is used to signify a stable and an ox-stall. Κυδρίς seems to allude to a roundish form of the hole, which might have some resemblance to a caldron, which in Greek is called κυδρίς α.

for want of stone columns I have set strong wooden pillars; and I built on the columns a couple of cotes all around, of the height of seven cubits. And I indeed made a window in the wall from the west for light, and another window from the east; and I fixed in this, what is called lattice<sup>a</sup>, whence the pigeons are to go out to feed: and on the south side I placed the door, for the convenience of the person who had the care of the birds: and I thus kept the pigeons unhurt, for reptiles cannot get up, the columns being so very carefully plastered and made so smooth; nor is it possible for a cat, nor for any other animal, to use its craft, there being no buildings near, from which they may be able to put their designs in execution. But it is proper that a person who wishes to raise a pigeon-house, should not begin to breed from young pigeons, but from such as have already bred. If there are ten pairs for a stock, they are soon multiplied.

## VII.

<sup>a</sup> Κεθιςτηρ. Varro and Columella say the house had a lattice or reticulated window. The Greek term properly expresses no more than a contrivance to let out the pigeons. The situation of the window towards the east was well adapted to call forth the birds to early feeding.

## VII.—CONCERNING DOMESTIC FOWLS.

WE are to breed domestic fowls in warm and well-covered houses, to which smoke has access: and we are to make nest-holes in the walls for them to lay, having their bottoms laid with board, and supplied with straw, that the eggs that are laid may not fall on a hard bottom and be broken: and it is necessary to fix perches in the walls on which the fowls may settle. You are also to give them for food boiled ptisane, or millet, or wheat gurgeons, or darnel, which is called *aira*, which are very good for nourishment, and the green leaves of cytissus<sup>1</sup>, for these make them very prolific: and when they lay, it is proper particularly to observe that they may not 'eat grape-stones', for these render them less prolific. You are also to break hens of the practice of sucking their eggs in this manner: you are to take out the white of the egg, and you are to pour on the yolk, that is, the yellow part of the egg, gypsum in a liquid state, that it may become hard; for when they are induced to repeat the

M 3

practice,

<sup>1</sup> This is also recommended by Columella, lib. viii. 4, 1.

<sup>2</sup> Columella and Palladius observe this, Col. viii. 4, 2; Pal. i. 27.

practice, and find nothing else, they will soon abstain from destroying their eggs. They are also particularly well fatted, and they become very plump, when fed in a dark and warm house, and their pinions being plucked, and barley-meal made up with water being brought them to feed on. Others also use barley-meal and the meal of darnel, or barley, and the seed of flax with omelysis<sup>u</sup>. Some indeed likewise mix meal of parched barley, and some also pour wine on it. Some, soaking wheat-bread in good wine, give it them; but most persons feed them with millet. But a person who wishes to raise fowls must select hens that are the most prolific; and he learns this from use and experience, and from some other indications: as, for a general instance, those that are of a yellowish hue, and with extraordinary<sup>v</sup> claws, having large eyes, and a high crest; and those with black wings, and those of a large size, and those that will with facility receive the embraces of love; and they are better  
for

<sup>u</sup> The more circumscribed these external appendages are, the more will the power of nutrition be promoted, in the same ratio, by inverse proportion.

<sup>u</sup> Meal of barley that had not been parched.

<sup>v</sup> The Greek word signifies *claws*, in number more than usual.

for laying, and they produce large eggs, from which proceeds a generous offspring. But you are not to feed more than forty hens in the hen-house, for they do not thrive when too much confined; and let a sixth part of the fowls be cocks: and you are immediately to take the eggs that are laid, and to put them in vessels with bran. When we also wish fowls to lay, we are to set clean straw under them, and to lay an iron<sup>v</sup> nail in it, for this seems to be of service against every evil. More than twenty-three<sup>z</sup> eggs indeed are not laid under a good hen, and fewer under one that is not a good one, according to the natural power of each bird: but the number must always be uneven; and you must set them under the hen when the moon is increasing, that is, after the new moon to the fourteenth day of its age: those indeed that are set before the new moon, become abortive. It is also necessary to set the eggs chiefly that were laid from the blowing of Favonius to the autumnal equinox, that is, from the seventh of February to the twenty-second of September; wherefore you are to set them apart

M 4

in

<sup>v</sup> Columella mentions the same thing, lib. viii. 5, 12.

<sup>z</sup> Columella recommends 21 eggs, this author 23; Varro went so far as to mention 25, which might not seem so extraordinary in a warm climate.

in the breeding-season; that a young brood may be raised. But you are not to set the eggs laid before this season or afterwards; and all the first-laid eggs are not to be set, for they are steril and imperfect. The best season indeed to set the eggs is from the vernal equinox, that is, from the twenty-fourth of the month of March; and it is necessary to set them under hens that are advanced in age, not under those that are in full vigour and able to lay: for they are in the most perfect vigour for laying when a year and two years old, but such as are more advanced than this are less adapted for laying. You must indeed preclude those hens that have spurs as the cocks, from sitting, for they destroy\* their eggs. After setting the eggs you are to put in the hens, that they may cherish the eggs during all the day and the night; but you are to open the door in the morning and evening, and you are to set before them their usual food; and then you are again to shut them in; and you are to compel such as do not get up spontaneously, to get in: and let the keeper turn the eggs every day, that they may be equally cherished on every side.

But

\* The Greek expresses that they are more fit for laying when two years old than when only a year old.

\* Perforate, literally.

But the eggs are distinguished, whether they are prolific, if, after they have been sit upon four days, they be examined against the rays of the sun; for if indeed any thing appears pervading the inside, and of a bloody hue, the egg will be prolific; but if it be pellucid, it is to be thrown away as unprolific, and you are to set others instead of the eggs that are disapproved. But there is no need to fear that the eggs may be addled, if they be often gently turned, for nothing then hurts them. It is also proper not to set one hen only the same day, but three or four; and you are immediately to take the chickens that are hatched, from every hen, and to set them under one that has but few: and you are to divide the eggs that are not hatched, between the hens that are still sitting, that being cherished by them they may come to life; but you are not to set under a hen that has a small brood more than thirty chickens. But cold is very inimical to the race of fowls. You will thus prove if eggs are good: put them in water, for one that is faulty swims as being useless, but that which is fully perfect will sink to the bottom; nor is it proper to shake the eggs in proving them, that the vital principle in them may not be destroyed: and as some persons set heterogeneous eggs under domestic fowls, you are  
to



to know that a hen hatches the eggs of a pheasant, in the same manner as its own, in twenty-one days; but the eggs of a pea-fowl<sup>a</sup>, and of a goose, in twenty-nine days. Calculate then, and set these according to those already mentioned, that they may be hatched seven or eight days afterwards. But there are in Alexandria, belonging to Egypt, hens called *monosyri*, from which game-cocks may be raised, which sit on two or three sets of eggs successively, so that the chickens that are hatched are taken away and bred apart, and the bird sits forty-two<sup>b</sup> or sixty-three days.

#### VIII. — HOW IT IS POSSIBLE TO PRODUCE CHICKENS WITHOUT A HEN.

You will have a number of chickens without incubation in this manner. When you set eggs under a hen that is sitting, the same day take some dung of fowls, pound it small, and sift it, and put it in pots<sup>c</sup>, and lay hen's feathers all over

<sup>a</sup> Varro says, in twenty-seven days. Pliny says, from the twenty-seventh to the thirtieth day.

<sup>b</sup>  $21 + 21 = 42$   $42 + 21 = 63$ .

<sup>c</sup> The pots were such as were by the Romans called *cucurbitae*.

over the dung, and on these set the eggs perpendicularly, having the sharp end uppermost; then scatter some of the same dung over these again, until they are totally covered, and let them remain two or three days, and afterwards turn them every day, taking care that the eggs may not touch each other, that they may be equally cherished: and after the twentieth day, when the hen's eggs begin to hatch, you will also find those in the pots cracked: wherefore they also set down the day on which the eggs have been set, that the number of the days may not be forgotten. On the twentieth day then take off the shell, and having cherished the chickens, put them in a basket, and introduce the hen, and she will take the management of ~~all the chickens~~. That they may also have food, take some leaven of barley, and mix some gurgeons with water; and put some ass or horse dung in the pots, and after three days worms will be produced to feed the young brood.

#### IX.—CONCERNING THE FEEDING OF CHICKENS.

THE chickens being indeed first put in a basket, are suspended over a little smoke, but they take no nourishment during two days. Se-  
cure

cure the vessel, from which food is given them, with<sup>d</sup> cow-dung. The food they first take during fifteen days is barley-meal, macerated with cress seed with wine and water. But the house is also suffumigated with one of the things that<sup>e</sup> drive away reptiles. Let them be altogether under cover to the fortieth day, and you are to feed them in a very warm coop; for the cold is very inimical to them. There have indeed been found certain antidotes, which preserve hens<sup>f</sup>. If rue is tied under the hen's wings, neither a cat, nor a fox, nor any other noxious animal, will touch them; and especially if you give them food with which the gall of a fox, or of a cat has been mixed, as Democritus positively affirms,

#### X. — TO MAKE EGGS BEAR AN INSCRIPTION.

POUND galls and alum with vinegar, till they are of the thickness of black ink, and inscribe on the egg what you please; and when the writing is dried in the sun, put the egg in sharp brine; and  
when

<sup>d</sup> Probably with a view of preparing them for the farm yard.

<sup>e</sup> See xiii. 8.

<sup>f</sup> There is a mutilated sentence after this, which some have tried to restore from Pliny, l. xxx. 15, 50.

when it is dry, boil it; and when you have removed the shell, you will find the inscription. If you also cover an egg with wax, and draw<sup>c</sup> characters on it, so that the shell may appear as if engraven, and then permit it to be macerated in vinegar for a night; the following day you may remove the wax, and you will find the shape of the characters become transparent by the vinegar.

**XI.—THAT HENS MAY PRODUCE LARGE EGGS;  
AND CONCERNING THE KEEPING OF EGGS.**

You will make your hens produce large eggs, if you pound the Lacedemonian<sup>b</sup> shell, and mix it with bran; and having wrought it with wine, give it the hens: or mix an acetabulum of the pounded shell with two chœnices of bran, and give it them to eat. But some, wishing their hens to lay large eggs, reduce red earth<sup>d</sup> to a state of solution, and  
mix

<sup>c</sup> The characters were probably drawn with the stylus. This method seems to have had some kind of analogy to the modern invention of engraving with aqua-fortis.

<sup>b</sup> Supposed by some to have been the shell which produced the Lacedemonian purple, which was so much valued after the Tyrian sort.

<sup>d</sup> Called *μυλτος*.

mix it with their food. They will not become abortive, if you roast the white of an egg, and pound an equal quantity of dried grapes, that have been toasted, and set them before the hens, before their other food. Some also afford the coops, and the nests, and the hens themselves, a lustration with sulphur, and asphaltos, and torches of the pitchy pine. Some also lay a plate of iron, or the heads of nails, and branches of the bay-tree in the nests, for these seem to be of use<sup>k</sup> against thunder. You will also keep eggs indeed in chaff in the winter; and in bran in the summer. Others likewise wash the eggs with water and fine salt, and cover<sup>l</sup> them, and so keep them. Some also lay them in warm brine three or four hours, they then take them out, and lay them in bran or in chaff; but a certain portion of those that are laid in brine or in salt, is wasted. You will distinguish a sound egg, and one that is not so, by putting it in water; for that which is imperfect will swim, and that which is sound will sink to the bottom.

## XII.

<sup>k</sup> Literally, alexipharmics or amulets.

<sup>l</sup> With water and salt, which the Greek implies, were so mixed that the water was thick with the quantity of salt.

## XII.—THAT A HEN MAY NOT CATCH COLD.

HAVING macerated origanum, give the bird the liquor to drink: or wash it with urine; or rub its<sup>m</sup> bill with garlic; or put this in water, and give it the hen to drink.

## XIII.—TO MAKE HENS VERTIGINOUS.

HAVING mixed laser with honey macerate wheat, and throw it to them.

## XIV.—THAT HENS MAY NOT PROVE ABORTIVE.

A HEN will not prove abortive, if you roast the yolk of an egg, and pound an equal quantity of dried grapes that have been toasted, and give it the bird before her other food.

## XV. — THAT HENS MAY NOT BE HURT BY A CAT.

A CAT does not touch a hen, if wild rue be suspended under its wing.

## XVI.

<sup>m</sup> Its nostrils, in the Greek.

## XVI.—CONCERNING COCKS.

It is proper to choose the fiercest cocks: and this is understood from use and experience, and from certain other indications; for the best cocks are of a compact size, and they have a crest of crimson hue, and a short beak; and they have a good<sup>a</sup> countenance, and black eyes; and they have wattles of rosy colour, and a compact<sup>o</sup> neck; and they are of varied colours, and their legs are scaly<sup>p</sup>, rather stout than long; and they have strong spurs with sharp points, and large and thick tails. Let them be also fierce, and apt to crow, and resolute in battle; and let them not indeed be the first to begin the contest, but let them valiantly repel their aggressors; and let them not fly from noxious animals, but let them keep them away from the hens. You are also to give the cocks the seed and the moist leaves of cytissus, having soaked them in water, for they are no less nutritious to them than the leaves that are green.

## XVII.

<sup>a</sup> The goodness of their sight seems to have come under this expression, according to the Greek.

<sup>o</sup> Well set, is the Greek epithet.

<sup>p</sup> This epithet in Greek is often applied to serpents.

XVII.—CONCERNING THE VARIOUS CURES OF  
HENS.

You will cure a hen's eye by rubbing the exterior part of the eye with the milk of a female, or with the juice of purslain, or with sal ammoniac, or with cumin and honey, having pounded an equal part of each, and having likewise applied them. Confine the bird also in a shady place. You will also cure a looseness by mixing a handful of barley-meal<sup>1</sup> and an equal quantity of wax, and by making them of due consistence, and administering them before the other food; or by giving the bird a decoction of apples, or of quinces, to drink : and these being roasted are of service. You will also cure a hen of the *morbis pedicularis*, by pounding an equal quantity of parched cumin and staphisagria<sup>2</sup>, and by washing the bird with wine ; and wash it with wild lupines boiled in water. Foul water gives a hen cold ; it is therefore proper to give it clean water. You will also cure a cold by cutting garlic into small pieces, and throwing them into warm oil ; then cool it, by washing the bird's mouth : and if

VOL. II.

N

the

<sup>1</sup> Of the kind called *αλφιτρον*.

<sup>2</sup> The French call this *herbe aux-poux*.



the hens eat it, they will be the more speedily cured. Staphisagria also by itself, or mixed with orobus, is useful: and clean squill soaked in water, and then administered with barley-meal, has this effect. But if hens have a more than ordinary cold, they are lanced under the gills, and the parts about the eyes are pressed, and the wounds are rubbed with fine salt. Some also make a suffumigation of origanum, and hyssop, and thyme, holding the bird's head over it; and they rub the beak with garlic. Some likewise boil garlic in human urine, and carefully rub the beak with it, so as not to touch the eyes.

### XVIII.—CONCERNING PEACOCKS.

PEACOCKS are chiefly bred in factitious islands\*: but let the place have abundant plenty of grass, and an orchard: and you are to separate those of a generous breed from those that are weak; for those that are strong oppress those that are feeble. The hens indeed, when they are three† years old, breed; but they that are younger, either do not hatch, or do not feed the young fowls.

You

\* Palladius says they were more secure from the fox in such a situation.

† Pliny says the same thing, l. x. 59.

You are also to give peacocks for food, during the winter, beans parched on a coal fire, and before their other food, six cyathi to each bird; and you are to set clean water for them, for they will thus be more prolific: and you are to spread hay or straw in the house for them that lay, that the eggs, when they drop, may not be broken; for they drop their eggs standing, and they do this twice in the year, but they have not more than twelve eggs in all. But it is proper to set the eggs when the moon is nine days old, nine in the whole, five of its own, and four of the domestic fowl: and you must take away those of the domestic fowl on the tenth day, and set others, that the hens eggs may be hatched on the thirtieth day with those of the pea fowl. It is not proper indeed to give the young brood, that is hatched, food the first two days; but on the third day we carry them barley-meal made up with wine, and gurgeons<sup>u</sup> dressed and boiled, and the tenderest leaves of leeks pounded with green cheese. But let barley be given them after six months.

N 2

XIX.

<sup>u</sup> Πιτυγες, bran.

**XIX.—CONCERNING PHEASANTS, AND NUM-  
DIAN FOWLS, AND PARTRIDGES, AND FRAN-  
COLINOS.†**

You are indeed to bring up these birds also in the same manner as we have informed you peacocks are raised. Being confined, they are also fattened, so that they may receive no nourishment the first day; but on the following day you are to give them hydromel or wine, and barley-meal mixed with water for food; and you are to give it them gradually, and you are to set a little at a time for them: then boil ground beans, and ptisane, and whole millet, and linseed, and so mix them with barley-meal, and add some oil to them, and make them into pellets; and carry them this food till they are satisfied. Some indeed also give them fenugreek for five or six days, being desirous to rid the birds of bile, and to purge them. They are fattened in sixty‡ days at the farthest. These kinds of birds are also cured

† The Roman and Greek name of this bird is *attagen*, by some supposed to be the *lagopus* of Pliny, lib. x. c. 48. The Italians call it *francolino*. See Edwards's birds, plate 246.

‡ The manuscripts differ in respect to the number of days. In some the number is 3, and not 5.

cured by the prescriptions already mentioned with respect to domestic fowls.

## XX.—CONCERNING PARTRIDGES.

PARTRIDGES have by nature a very ardent desire for copulation; whence the cock birds, prompted by jealousy, contend with each other for the female birds: when therefore there are found two cocks among the hen birds, they immediately engage, and the contest is no sooner ended, before one of them, being overcome, withdraws: then all the female birds in future follow that which appears to be the master bird; and this, being elated, treads the bird that is overcome, and he will afterwards follow the victor in the train of his female attendants.

## XXI.—CONCERNING THE TAKING OF PARTRIDGES AND OTHER BIRDS.

You will easily take partridges, if you macerate barley-meal in wine, and lay it for them. You will also take any bird with ease, if you set wine mixed with water in vessels for it, the potion being strongly impregnated with wine: for

N 3

when

when they drink a little of it, they become quite sleepy, and do not fly from their pursuers.

## XXII.—CONCERNING GESE.

You are to choose the largest and the whitest geese; and you are to make your goose-pen in a grassy and watery situation; and you are to give them all kinds of pulse for food, except the orobus: give them also the leaves of lettuce<sup>\*</sup>; but you are to preclude them from eating agrostis, for it becomes the cause of indigestion. They lay three times a year, twelve eggs, and sometimes more; and some of these you are to set under hens. The goslings must remain within the first ten days; but when it is fine weather, let us drive them to pasture; and we are to drive them to water when they are well fed; and we are to see that they are not stung with nettles, or any thorn. We are likewise to take care that they do not swallow the hair of a kid or of a hog, for when they swallow it they die. When the goslings are first hatched, soak meal of parched barley, wheat, and green cresses, and feed them. Geese are fattened in warm pens, with two parts

of

<sup>\*</sup> This is recommended by Columella, viii. 14. 2.

of barley-meal, and four of bran, mixed with hot water, and thrown to them, to eat as much as they wish. They eat three times a day, and about midnight; and they drink plentifully. After they are grown to a good size, cut dry figs into small pieces, and mix them with water, and give it them to drink for twenty days. It is also necessary to mark the eggs of each goose with some characters, to set these under the right goose, for this race does not cherish the eggs of other geese. You ought likewise to set nine eggs under a goose, or eleven, but not less than nine. The bird sits mostly during nine-and-twenty days, but when the weather is cold, thirty; but during the days it sits, you are to set before it barley soaked in water. If a person wishes to make their livers<sup>r</sup> large, after thirty days let him cut dry figs into small pieces, and let him mix them with water, and let him administer them during twenty days, or seventeen at least. But some, to make the liver large, and to make the goose fat, feed it in this manner: having confined it, they give it macerated wheat, or barley thus prepared; for wheat soon fattens, and barley

N 4

makes

<sup>r</sup> The fatted livers of geese and swine made part of the luxury of the Greeks and Romans. See Pliny, viii. 51, 77; and x. 22. 27. Horace, Ser. 2. 8. 88. Martial, xiii. 58. Palladius, i. 30. Plin. Ep. ii. 6.

makes the flesh white. Let the bird then eat one of the sorts already mentioned, or both, for five-and-twenty days; then bring it seven collyria<sup>z</sup> a day, for five days, and let the number be increased to fifteen, so that all the days may be thirty; and when fifty days are expired, boil some mallows, and soak some leaven in the decoction while it is hot, and exhibit it, and do this during four days. Offer the bird also melicraton on those days, changing it thrice every day, and not using the same; and the six following days, cut dry figs in small pieces, and administer them with the leaven already mentioned; and thus, after sixty<sup>a</sup> days, you will have the liver tender and white, which, when taken out, you must put in a large vessel, having warm water, which you must change twice<sup>b</sup> or thrice. The flesh and livers of the female birds are the best. Let not the geese be a year old, but from two to four years of age.

## XXIII.

<sup>z</sup> They seem here to signify what are called pastils, or troches. They were pellets made in the form of collyria for feeding the bird.

$$^a 25 + 5 + 20 + \overset{4+6}{\cancel{46}} = 60.$$

<sup>b</sup> Twice and thrice, in the Greek.

## XXIII.—CONCERNING DUCKS.

SOME call ducks by<sup>c</sup> one appellation, some by another. But you are to breed them within well-raised fences, that they may not fly away. You are also to raise agrostis in the middle of the place that receives them; and you are to throw their food into the canal, as wheat, or millet, or barley, or refuse of grapes, mixed with them; and sometimes *locustæ* also, or *squillæ*<sup>d</sup>, and other water and river fish, similar to these, which they have been accustomed to have. Some persons indeed, wishing to have them more tame, look for their eggs about ponds, and set them under hens, and they feed them, and they will have them tame. An abundant quantity of food fattens these, as it does most other birds: and if a person observes the place where they drink, and having thrown<sup>e</sup> out the water puts in black wine, they

<sup>c</sup> They were called *myra* and *morra*. The first might possibly be the original name; but when this race was tamed, the female birds being so useful in incubation, gave their name to their kind.

<sup>d</sup> Matthioli describes these fish, lib. ii. c. 10. The name is now given to the white shrimp on the coasts of Kent. *Locusta* is mentioned by Pennant, class v. 34.

<sup>e</sup> Turned out, in the Greek.



they drink it, and fall, and are easily taken. The lees of wine will have the same effect.

XXIV. — CONCERNING TURTLE-DOVES, AND QUAILS, AND THRUSHES, AND OTHER SMALL BIRDS.

TURTLE-DOVES are indeed fattened with millet and panic, and plenty of drink; and they delight in a place adapted to them, and in water. Quails also feed on millet, wheat, darnel, and clean water: but as quails feeding on hellebore<sup>f</sup> are pernicious to the persons that eat them, causing convulsion<sup>g</sup> and giddiness, you are to boil millet along with them: and if a person having eaten them be taken ill, let him drink a decoction of millet. Myrtle berries also have the same effect; and these are of great utility against poisonous mushrooms. Millet possesses likewise another physical power, of use to the human race; for if a person previously eats bread made of millet, he will not be hurt by poison. Thrushes are also fed

<sup>f</sup> See Pliny, x. 23. Aristot. *de Plant.* i. 5. Galen *de Therm.* i. 4, &c.

<sup>g</sup> Avicenna says, that the persons that eat them are in danger of falling into convulsions and spasms.

fed in a warm building; and you are to fix perches in the walls of the little edifice, and you are to set branches of the bay, or of some other tree, in the corners: and their food is placed on a clean part of the pavement, that is, dry figs macerated in water, and pressed, and mixed with wheat or barley-meal, and myrtle berries, and the fruit of the lentisc, and ivy berries, and the seed of the bay, and the fruit of the olive, and such things. But millet and panic, and very clear water, will make them fatter<sup>a</sup>. The small birds are also fattened with millet and panic, and baked spelt soaked in clean water.

#### XXV.—CONCERNING JACK-DAWS.

You will drive away jack-daws, if having taken one you hang it up; for the rest, seeing this, will fly away, suspecting that there are snares in the ground. You will also preclude jack-daws, and every other bird, from coming into your grounds, if having macerated black hellebore in wine with barley, you throw it to them. You will also act prudently, if, before they settle on your land, you keep them off with some noise; and

<sup>a</sup> These may possibly be the *miliarie* mentioned by Varro, *iii.* 5,

and the noise from the crotala,<sup>1</sup> and from the<sup>2</sup> bull's hide, is sufficient to frighten them.

## XXVI.—CONCERNING VULTURES.

ARISTOTLE says, that vultures die from<sup>1</sup> the smell of perfume, and canthari from the smell of roses, for an unsavoury smell is salutary to these; and that vultures do not copulate, but that they fly with their heads against the south wind, and become prolific, and that they produce their young after three years.

<sup>1</sup> They were musical instruments made of two round brass plates, which were played on by striking the one against the other. Cæl. lib. xix. c. 4.

<sup>2</sup> It is possible that the *τυμπανα* of the Greeks were mounted with this skin.

<sup>1</sup> See Sext. Empir. Pyrrh. Hyp. 1. 14, 55. p. 16.

BOOK.

## BOOK XV.

## HYPOTHESIS.

These things are in this Book, being indeed the Fifteenth of the Select Precepts of Agriculture, and comprising natural sympathy and antipathy; and concerning the care of bees, and the making of honey; and that a person may not be stung by bees or wasps; and concerning the destroying of drones.

## I.—CONCERNING NATURAL SYMPATHY AND ANTIPATHY.

NATURE has found many things having sympathy and antipathy in respect of each other, as Plutarch says in his second book of his *Convivial Tracts*<sup>m</sup>. I have therefore deemed it necessary to arrange the most wonderful of these in this treatise of mine; for I have taken pains that not only the lovers of agriculture should collect what is useful from my labours, but that my discourse should be likewise adapted to the lovers of literature.

<sup>m</sup> Sympos, ii. Quest. vii.

rature. You must know then that an elephant<sup>a</sup> in consummate fury becomes tame at the sight of a ram; and that he abhors the grunting of a pig. A wild bull<sup>b</sup> becomes composed and gentle when tied to a fig-tree. A horse<sup>c</sup> bit by a wolf will be a good and a swift one; and sheep bit by wolves have their flesh of a sweeter flavour, but their wool<sup>d</sup> produces vermin: these things are indeed mentioned by Plutarch. Pamphilus also says, in his Treatise on the Philosophy of Nature, that horses treading<sup>e</sup> in the steps of wolves become torpid in their limbs; and that a wolf, when he touches a squill, becomes spasmodic, for which reason foxes lay squills in their holes on account of the wolves. A wolf, if he<sup>f</sup> first sees a man, renders him feeble and speechless, as Plato says in his Treatise on Politics: but when the wolf is first seen by the human creature, his powers desert him. A lion treading on the leaves of the holm-oak becomes motionless: he also dreads a cock and his crowing; and if he sees him, he flies away.

<sup>a</sup> Plutarch mentions this. Symp. lib. ii. p. 641.

<sup>b</sup> See Pliny, xxiii. 7. 64.

<sup>c</sup> This is taken notice of by Plutarch, Prob. viii.

<sup>d</sup> See Pliny, xi. 33.

<sup>e</sup> Anatolius, p. 300.

<sup>f</sup> Virgil takes notice of this, Ecl. ix. 54.

away. A hyæna, by some natural instinct, when it sees on the nocturnal shade of a dog, formed by the moon, lets itself down from a height as if by a rope. And Nestor says in his *Panacæa*, that a hyæna, when it sees a man<sup>†</sup> or a dog asleep, lays its body along the creature that is asleep; and if it indeed finds itself of a greater size than the creature that is sleeping, it naturally, from its length, renders it delirious<sup>‡</sup>, and it feeds from<sup>¶</sup> its hands without any reluctance; but if it perceives itself to be shorter than it, it runs away with the utmost speed. When a hyæna advances towards you, beware lest it come upon you from the<sup>¶</sup> right side, for you will become motionless, and you will not have the power to help yourself: but when it comes upon you from the left side, attack it with confidence, for you will be sure to kill it. If a person holds the tongue<sup>×</sup> of a hyæna in his hand, he will have the surest protection against

<sup>†</sup> This is mentioned by Aristotle, *Mirabil. Auscultat.* and by Ælianus, iii. 7.

<sup>‡</sup> This alludes to the paraphrenesis, which was a temporary madness.

<sup>¶</sup> This can only refer to the human creature.

<sup>¶</sup> See Pliny, lib. xxviii. 8; and Æli. vi. 14.

<sup>×</sup> See Pliny, lib. i.

against the attack of dogs. If the polypus<sup>γ</sup> approach a crab, it casts its claws. When there is a fumigation of ivy, bats perish. Vultures perish from the smell of perfume. A serpent dies, when leaves of the oak are thrown upon it. A serpent will not stir, when a quill of the ibis is thrown at it. A viper, being once struck with a reed, becomes motionless; but repeatedly, it gathers strength. If you apply a branch of the beech to a viper, it is intimidated. If a testudo<sup>z</sup> eats serpents, it becomes sick; but when it eats origanum, it is convalescent. Storks lay leaves<sup>a</sup> of the plane-tree in their nests, on the account of bats. Swallows lay in parsley, on account of beetles<sup>b</sup>; ring-doves lay in bay; the circi<sup>c</sup>, lettuce; the harpæ<sup>d</sup>, ivy: crows lay in agnus<sup>e</sup>; the upupæ<sup>f</sup>, amianthus; ravens, vervain;

<sup>γ</sup> See Pliny, lib. ix. c. 30. This in the original is very ambiguous; Vitelli has translated it *polipody*, after the Latin.

<sup>z</sup> See Aristotle, H. A., ix. 6; Æli. iii. 5; and vi. 12.

<sup>a</sup> Anatolius takes notice of this, p. 298.

<sup>b</sup> This animal is called *blatta*, in Latin and Italian; Matth. lib. ii. 35.

<sup>c</sup> Κίρκος. See Ælianus, i. 35.

<sup>d</sup> See Alciat. in Emb. *Altivolam milvus comitatur degener harpam*.

<sup>e</sup> The vitex of the Romans came under this name.

<sup>f</sup> See Pliny, x. c. 29.

warren; larks lay in agrostis, whence the adage,

In the lark's nest is the perverse agrostis laid.

Thrushes lay in myrtle; the partridge, the tops of reeds; the ardea<sup>†</sup>, a crab: the eagle lays in maiden-hair.

Theophrastus and Aristotle say, that animals are not only generated one from another, but that they are spontaneously produced, and that they arise from putrid mould, and that some animals and plants are changed into others: for they say that the caterpillar is changed into another winged creature, called the butterfly; and that the worms from the fig-tree are changed into cantharides; and the hydrus<sup>‡</sup> into a viper, when ponds are dried. It seems also, that some animals are transformed according to the seasons; as the hawk is changed into the upupa; and as the erithacus<sup>§</sup> and the summer phœnicuri<sup>¶</sup> are transformed in the same way as the ficedula and the melancoryphi are metamorphosed; for it is the

VOL. II.

O

ficedula

<sup>†</sup> *Egretta*. The heron and other birds come under this name; Pennant, class ii. 173.

<sup>‡</sup> The Latin name of this was *natrix*; Matth. i. vi. c. 51.

<sup>§</sup> It was the *rubecula* of the Romans.

<sup>¶</sup> The *ruticilla* of the Romans.



ficedula about autumn, and immediately after the vintage it becomes a melancoruphos<sup>1</sup>. If sea-birds are hurt in their beaks, they are cured with origanum. A radish, when laid on a scorpion, kills it. If a person stung by a scorpion sit in an erect posture on an ass, looking towards its tail, the ass will suffer for him, and it gives an unequivocal proof of it. If a person stung by a scorpion says to the ass, "A scorpion has stung me," he will suffer no pain, it being transferred to the ass. Ants, that the wheat accumulated by them may not grow, eat the interior part of the grain. The seeds that, in sowing, touch the horn of the ox, are not affected by fire; and these are called *kerasbola*. The magnet, or sideritis, attracts iron; but it is divested of this power, when rubbed with garlic: it recovers its power, if the blood of a goat is poured upon it. Amber, or succinum, attracts to itself chaff and all light things, except basil. There are two sorts of ætites<sup>m</sup>; the one indeed is dense and solid, the other rarefied and light; but that indeed which is solid, being tied to females, promotes the growth of the foetus. Coral in a house keeps off all violence and treachery; and shoots of ebony have

<sup>1</sup> *Atricapilla* of the Romans.

<sup>m</sup> See Pliny, 36, 39. This is, in English, called eagle-stone.

have the same effect, as well as the roots of aspalathus<sup>a</sup>, and the sweet-scented anagallis<sup>b</sup>, and dried squill, lying in the vestibule of a house. A fumigation of the stone called gagates<sup>c</sup>, drives away reptiles; and this stone, when besprinkled with cold water, and brought to the fire, burns with much splendor, as Nestor says in his Panacæa; but when oil is poured on it, it ceases to burn. Amianthus is superior to the power of fire, and it is not burnt, although it should remain a long time in the fire. The salamander<sup>d</sup> likewise, a very small animal, is produced from fire, and it lives in fire, and is not consumed by its flame. Bulls, when their nostrils are rubbed with a preparation of roses, become vertiginous. A he-goat will not run away, if you cut his beard.

## II.—CONCERNING BEES, AND HOW THEY MAY BE PRODUCED FROM AN OX, WHICH IS CALLED BOUGONE.

THE place in which the bees are to be, ought to be turned to the aspect where the sun rises

o 2

in

<sup>a</sup> Matth. l. i. c. 19.

<sup>b</sup> See Matthiol. l. ii. c. 174.

<sup>c</sup> Matthiol. l. iv. c. 103.

<sup>d</sup> Matthiol. l. ii. c. 56, gives an account of this animal, as do *Acta Eruditorum*, for 1667.

in the winter or in the spring, that they may be cherished in the winter, and that the vernal air, blowing on them, may refresh them. The best water for the bees is that which runs through rough gravel, clear and not turbid ; for it renders the bees healthy, and it makes good honey. But it is proper to set pebbles and stones, and wood, rising a little above the water, that they may rest upon them, and drink at their ease : and if there is no spring-water, you must draw water out of a well into clean vessels<sup>\*</sup> or cisterns<sup>\*</sup>, and let them be near the bees, that they may not be fatigued in going to water. They are very fond of thyme ; and when they are well fed with it, they make the greatest quantity of honey, and they breed well. Sage also, and thymbra, and cytissus, are very grateful food to bees, and the fresh swarms are very apt to pitch on cytissus, and they receive nourishment from it without much labour. But the best hives, that is, the vessels to receive the bees, are made of boards of the mountain ash, or of the fig-tree, and of the pine likewise, and of the beech. Let the breadth of them be a cubit, and the length two cubits ; and let them be covered on the outside with a preparation of plaster and

<sup>\*</sup> Press-vessels, in the Greek.

<sup>\*</sup> Fountains, in the Greek.

and cow-dung; for they will be less apt to rot. It is also proper to perforate them obliquely, that the air gently blowing, may dry the cobweb and other obstacles, and that it may refresh the bees. But this animal delights in a solitary situation, and it detests the approach of human creatures; for which reason, the bee-keeper must build a wall of hollow stones around them, that they, flying into the holes, may have the power to escape the birds that lie in wait for them, and the dew. They are attached to their accustomed pastures, and they do not willingly come into strange grounds: for which reason it is proper to keep them in the same place. But if it be necessary for a purchaser, or for some other reason, that they should be removed, let the person tie the hives, in the night, carefully in leather<sup>†</sup>; and let him take them away before day; for in this private manner he will neither disturb the combs, nor harass the bees. When they indeed feed on spurge, and taste its juice, they contract a looseness<sup>‡</sup>; it is therefore proper to remove and to extirpate that which grows near them, and to cure them with the rind of the fruit of the pomegranate, that is, with the integument;

o 3

having

<sup>†</sup> Skins, in the Greek.

<sup>‡</sup> Diarrhœa, in the Greek.

having pounded it, and sifted it through a fine sieve, having mixed it with honey and with rough wine, and having set it for them. You will also cure them of vermin, by burning branches of the apple-tree, and of the wild fig-tree, and by making a suffumigation. You will likewise cure them of dimness of sight with the smoke of the leaves of *origanum*. Now, as bees produced from an ox come to life on the one-and-twentieth day, so are swarms produced in the same number of days. The kings indeed are found in the upper parts of the combs: and it is proper to leave one in every hive, and to destroy the rest; for the bees being divided between them, raise a sedition, and they desist from their work. The best indeed of the kings are those of a yellow colour, of a size larger than that of a bee by the half; the second are those that are variegated, rather of a dark colour, of double size. But it is proper to remove from the place spurge, and hellebore, and *thapsia*<sup>v</sup>, and *absinthium*, and the wild cucumber, and all things that are pernicious to the bees; for they indeed make bad honey, and they take it from these. You will also destroy creatures that lie in wait for them; and they are wasps,

<sup>v</sup> See Pliny, xiii. 22; and Dioscorides, l. iv. Matth. iv. 151.

wasps, the titmouse<sup>¶</sup>, the bee-eater<sup>\*</sup>, swallows, crocodiles<sup>¶</sup>, and lizards; and drive away and destroy all things that are pernicious to the bee. They indeed become unmanageable at the approach of human creatures, and they fall upon them, and they are more severe on such as smell of wine, and of perfume<sup>\*</sup>; and they fall upon women, especially upon such as are of an amorous complexion. But let the hives in which the bees are, be carefully rubbed with the choicest thyme, or with the white poplar: and that they may like their hives and remain in them, pound an equal quantity of nard and myrrh, and mix them with a quadruple proportion of honey, and you are to rub the hives with these. Iobas, king of Libya, says, that bees might be raised in a wooden coffer: and Democritus<sup>\*</sup>, and Varro, in the Roman tongue, say that bees are to be raised in a house, which is much better; and the method is this: let there be a building ten cubits high, and of the same number of cubits in breadth, and

o 4

of

¶ In Greek, *αργαλας*; in Latin, *parus*; in French, *mesange*.

¶ In Greek and Latin, *merops*.

¶ Matth. iii. 10.

¶ Varro, iii. 16. Columella, 9. 14. 3.

\* Columella says this ought to be done, from the summer solstice to the rising of the dog-star, 9. 14.

of equal dimensions<sup>b</sup>, at all sides, and let there be one entrance, and four windows made in it, one window in each wall : then bring into this building a bullock, two years<sup>c</sup> and a half old, fleshy, very fat : set to work a number of young men, and let them powerfully beat it, and by beating, let them kill it with their bludgeons, pervading the bones along with the flesh : but let them take care that they do not make the beast bloody (for the bee is not produced from blood), not falling on with so much violence with the first blows : and let all the apertures be stopped with clean and fine cloths dipped in pitch ; as the eyes, and the mouth, and such as are formed by nature for necessary evacuation : then, having scattered a good quantity of thyme, and having laid the bullock on it, let them immediately go out of the house, and let them cover the door and the windows with strong clay, that there may be no entrance nor vent to the air, nor to the wind. The third week it is proper to open the building

<sup>b</sup> The building was a cube ; that is, the six sides consisted of an equal number of cubits, and the angles were right angles.

<sup>c</sup> Thirty months, in the Greek. This method of raising bees is mentioned by many of the ancient writers. *Ælianus de animal.* l. ii. c. ult. *Virgil. Georg.* iv. 550.

building on all sides; that the light and pure air may be admitted, except the side where a strong wind blows in; for if this be the case, it is proper to keep the windows<sup>a</sup> shut on this side: but when the materials seem to be animated, having attracted a sufficient portion of air, it is again proper to secure the building with clay according to the former method: having then opened it on the eleventh day after this period, you will find it full of bees crowded in clusters on each other, and the horns, and the bones, and the hair, and nothing else of the bullock left. They say indeed that the kings are produced from the brain, but the other bees from the flesh. Kings are also produced from the spinal marrow. But those that are produced from the brain are superior to the others in size and beauty, and in strength. But the first change and transformation of the flesh into living creatures, and as it were a conception and birth, you will thus know; for when the building is opened, you will see things small and white in appearance, and like one another, and not perfect, nor yet such as may be properly called living animals, in great number about the bullock, all indeed motionless, but gradually increasing in size. You may then see the form of the

<sup>a</sup> Entrance, in the Greek.



the wings with their divisions, and the bees assuming their proper colour, and seated around their king, and flying, but to a small distance, and with tremulous wings, on account of their want of practice, and the debility of their members. They also settle on the windows with a murmuring noise, impelling and forcing one another, from the desire of approaching the light. But it is better to open and to shut the windows every other day, as it has been intimated; for it is proper, lest they change the nature of the bees, from longer confinement; for when the dwelling receives no air, the bees perish as from suffocation. Let the apiary be near the house; and when the bees fly out, when the windows are opened, make a suffumigation of thyme and of cneorum<sup>e</sup>; for by the smell you will draw them into the apiary, being attracted by the fragrance of the flowers; for when you make a fumigation of these things, you will easily bring them in; for bees like fragrance and flowers, which, as they fabricate honey, they ought to do.

### III.

<sup>e</sup> See Matthiolus, l. i. c. 13; and Pliny, xxi. 9.

### III.—CONCERNING BEES.

THE bee is the most sagacious and the most skilful of all<sup>f</sup> animals, and it approaches man in point of understanding; and its work is truly divine, and of the greatest utility to the human race; and the polity of this animal resembles the institutions of communities perfectly well managed; for they make excursions under their commander, and by his orders: and carrying the most glutinous substances from flowers and from trees, they cover the ground<sup>g</sup> plot and the entrances with these, as with unguent; and some make honey, and others do something else. It is likewise an extraordinarily cleanly<sup>h</sup> animal, settling on nothing that has a disagreeable smell, and that is impure; nor is it given to excessive feeding; nor does<sup>i</sup> it approach flesh, or blood, or any thing that is fat, but such things only as have an agreeable flavour; nor does<sup>k</sup> it injure the labours of others, but resists with all its might those

<sup>f</sup> Of all other animals, in the Greek.

<sup>g</sup> The Greek implies that it was tessellated.

<sup>h</sup> Varro, iii. 16. Palladius, i. 37.

<sup>i</sup> Aristotle, lib. i. and iv. 8, and viii. 11.

<sup>k</sup> Aristotle, lib. i. *Æli.* v. 11.

those that use their efforts to destroy its own labours; and, conscious of its want of strength, it makes a narrow and sinuous entrance into its hive; the bees therefore standing round, easily destroy a number entering to do them injury. Proper harmony is also grateful to this animal; for which reason, bee-masters bring them together by means<sup>1</sup> of cymbals, or by clapping their hands with just adaptation. This animal alone seeks a leader, that takes care of the whole swarm; it therefore always honours the king, and it accompanies him with alacrity, wherever he takes his station, and it supports him when he is fatigued, and it carries and protects him when he cannot fly. But it consummately hates the slothful; and they therefore take the slothful and kill them. Its mechanical skill indeed seems to make a very near approach to a rational understanding, for it makes hexagonal cells.

#### IV.—THAT BEES MAY NOT FLY AWAY.

BEES will not betake themselves to flight, if you will cover the entrances into the hives with the

<sup>1</sup> Varro, lib. iii. 16.

■ This transition is according to the original.

the fæces<sup>a</sup> of a heifer: and when a swarm is pitched and settled, take the king and<sup>o</sup> cut the extremities of his wings; for while he remains within, the bees will not relinquish the hive. The bees will not run away, if you pound the leaves of the wild and of the reclaimed olive, and rub the hives<sup>p</sup> towards the evening, or if you wash the standings<sup>q</sup> and the hives with melicraton. It is also proper to set food before the young swarms, œnomel, in troughs<sup>r</sup> having leaves and plenty of flowering thymbra, that they may not be drowned. But some pounding dried grapes together, and mixing a little thymbra with them, and laying them in pellets, feed the swarms in the best way possible, when the bees remaining in the hives are hungry through the winter's cold, or the summer's heat. When the vernal days are past, having driven them to their pastures, by a fumigation of dry cow-dung, you are to clean and sweep the hives; for the stinking

<sup>a</sup> The original is too accurately expressive of the quality of the fæces.

<sup>o</sup> Pliny says the same thing, lib. xi. c. 17.

<sup>p</sup> Swarms, in the Greek.

<sup>q</sup> Walls, in the Greek.

<sup>r</sup> Boats, in the Greek.

ing smell of common dung brings on them a listlessness, and cob-webs embarrass them. If there are indeed many combs in the hives, it is proper to take the worst, lest the bees become unhealthy for want of room. It is not proper to take more than two swarms from one hive; for the bees will be poor and debilitated.

#### V.—WHEN IT IS PROPER TO TAKE THE BEES.

THE best time to take the honey and the wax, is at the rising of the Pleiades; and, according to the Romans, about the beginning of the month of May: the second taking is when the autumn begins; and the third, when the Pleiades set, about the month of October: not however on set days, but according to the perfection of the combs; for if it is taken before they are wrought, the bees take a dislike to their habitation, and being thirsty, they cease from working. They also do the same, if you greedily take away all the stock, and entirely empty the hives: for you ought to leave the tenth part for them in the spring, and in the summer; but in the winter you ought to take a third part, and to leave two parts; for they thus will not despond, and they will have food. It is likewise proper to drive

drive them out with the smoke of cow-dung, or of the wild mallows\*, which they call *dendromylache*: and the taker ought to be rubbed with the juice of this, on account of the stings of the bees: and baum, and the flower of the lentisc, are useful on this occasion.

#### VI.—THAT THE HONEY-TAKER MAY NOT BE STUNG.

HAVING poured the juice of wild mallows with oil on the meal of parched fenugreek, and having made it of the consistence of honey, rub your face and the naked parts of your body strenuously; and having swallowed some of it, breathe into the hive three or four times: and having set fire to some cow-dung in a pot, and having brought it to the entrance into the hive, permit the smoke to break in during half an hour, and take and hold the pot at some distance, that the smoke may abound on the outside; and so take the bees. If you likewise wish to take wasps nests, prepare yourself in this manner, mixing the meal of fenugreek with oil, &c.

#### VII.

\* The original mentions, that the plant is of the male kind.

\* The mallow-tree.

# VII.—CONCERNING HONEY, AND THE MANAGEMENT OF IT.

THE Attic honey is the best; and of the Attic, the Hymettian\*. That also which is made in islands, is good. The Hyblæan† is the best of the Sicilian honey; and the Acramamorian‡, of the Cretan honey; and the Chutrian, of the Cyprian; and the Calumnian is the best of the Coan honey. Let it also be pellucid, and of a yellowish hue, and mellow, when touched; and when drawn, let it remain long coherent; and when taken up, let it come down gradually, and ending in a very small point; and when it is gently drawn, let it be taken up of due consistence; and let it be of an agreeable smell. But as all honey becomes dry in length of time, the Attic honey remains in a liquid state, and it becomes of a blackish colour. Be sure then to boil the inferior honey, for it will be better; but eat the best honey in its crude state; for it is not only pleasant to the persons that

\* What was made on Mount Hymettus, on the west of the river Asopus.

† Hybla was a mountain near Syracuse.

‡ Supposed to be made near the promontory of Samonium, on the eastern side of Crete.

that use it, but it also makes them long-lived; such persons therefore as are fed with honey with bread only, live a very long time; and it preserves all the senses perfect. Democritus being indeed asked, how men might become healthy and long-lived? said, "If they supplied the external parts of the body with oil, and the internal parts with honey." If the honey will be genuine, you will know by touching it; for when it is not adulterated, you<sup>\*</sup> will not soil yourself by touching it.

**VIII.—THAT SWARMS OF BEES, OR FIELDS, OR HOUSES, OR STALLS OF CATTLE, OR WORKSHOPS, MAY NOT BE AFFECTED BY ENCHANTMENT.**

DIG in the hoof of the right side of a sable ass, under the threshold of the door, and pour on some liquid pitchy resin, (and this is produced in Zacynthos<sup>†</sup>, out of a pond, as the asphaltus is thrown up in Apollonia<sup>‡</sup>, near Dyrrachium) and salt, and Heracleotic<sup>§</sup> origanum, and cardamomum,

<sup>\*</sup> You will touch it without soil, is the Greek expression.

<sup>†</sup> Mentioned by Pliny, xxxv. 15.

<sup>‡</sup> On the shore of the Adriatic.

<sup>§</sup> Harduinus ad Plin. xx. 16.



mum<sup>b</sup>, and cumin, some fine bread, squills, a chaplet of white or of crimson wool, the chaste<sup>c</sup> tree, vervain, sulphur, pitchy torches; and lay on some amaranthus<sup>d</sup> every month, and lay on the mould; and, having scattered seeds of different kinds, let them remain.

#### IX.—TO DESTROY THE DRONES.

If you wish to destroy the drones, early in the evening besprinkle the inside of the covers of the hives with water; and about the break of the day open the hives, and you will find the drones settled on the drops on the covers; for being always well fed with honey, they are thirsty: and having an insatiable thirst for water, they do not relinquish the moisture on the covers. You might indeed destroy them all, and none of them will escape. They are large, and they have no stings, and they are lazy. Aristotle says, that the honey made from the box-tree is of a disagreeable smell;  
of

<sup>b</sup> Matth. lib. i. c. 5.

<sup>c</sup> *Viter* or *agnus*.

<sup>d</sup> The original specifies that of a reddish colour. See Matth. lib. iv. c. 52.

<sup>e</sup> It appears from this passage, that the tops of the hives were made to be taken off.

of which if persons that are healthy eat, they are disturbed in their understanding; but that persons that are epileptic<sup>f</sup> are immediately cured of their disease.

X.—THAT A PERSON MAY NOT BE STUNG BY  
WASPS.

LET the person be rubbed with the juice of the wild<sup>e</sup> mallow, and he will not be stung.

This is mentioned by Aristotle, *de Mirabil. Auscult.*  
p. 1151, edit. Par.

8 Crescentius prescribes the juice of rue as a preventive, lib. vi.

1. The first of these is the fact that the  
 2. second of these is the fact that the  
 3. third of these is the fact that the  
 4. fourth of these is the fact that the  
 5. fifth of these is the fact that the  
 6. sixth of these is the fact that the  
 7. seventh of these is the fact that the  
 8. eighth of these is the fact that the  
 9. ninth of these is the fact that the  
 10. tenth of these is the fact that the

100-443887-100

BOOK

## BOOK XVI.

## HYPOTHESIS.

These things are in this Book, being indeed the Sixteenth of the Select Precepts concerning Agriculture; and comprising the arrangement concerning the care of horses, and the cure and the raising of them; and concerning asses and camels.

## I.—CONCERNING HORSES.

**T**HE mares, out of which we are to raise colts, must be well set, and of due proportion, and of a handsome appearance; and they must have a large belly, and the same proportion with regard to the flanks; and in respect of age, not younger than three, nor older than ten years. And the horse for admission must be large in the circumference of his body, compact in all his parts: but the time for covering is from the vernal equinox, that is, from the twenty-second of March to the twenty-second of June, that the colt may be foaled about the most temperate part of the summer,

summer, and when there is grass for it: for a mare goes with young eleven months and ten days; but the colts that are got after the summer solstice, are degenerate and useless. You are also to afford the horse rest from work at the time of admission; and he must not cover often in a day; only twice, in the morning, and in the evening: and if the mare, being once covered, does not<sup>a</sup> admit the horse, you are to bring him to her again after ten days; and if she does not receive him, you are to separate her as being in a state of impregnation; and when they<sup>1</sup> are in this state, you are to take care that they may not be over fatigued, and that they may not be stationed in cold situations; for cold is inimical to breeding-mares. But we shall make the horses perform their duty with alacrity, by bringing them near the mares. We may also discern whether the future colt will be a good one, thus, from his mental and bodily perfections: as indeed from his make; when he has a small head, a black eye; nostrils that are not collapsed; short ears; a delicate neck; a long mane, a little curled, falling on the right side of the neck; a wide breast;

P 3

good

<sup>a</sup> i. e. a second time.

<sup>1</sup> As in the Greek.

good shoulders; straight arms; a compact<sup>2</sup> belly; small testes; a double spine indeed, and if not one that is not gibbous; a large tail; curly; straight limbs; muscular haunches; a well-formed hoof, and evenly compact in all its parts; a small frog, a solid hoof. From all these indications, it is certain that he will be a good and an elegant horse. From his mental qualities also he is thus proved: if he is not timid nor frightened at objects that appear as unforeseen, but loves to be the first among the colts; not receding, but impelling that which is before him; and in rivers and ponds, not waiting for another to go in before him, but doing this himself first with intrepidity. But you are to begin to make colts tractable after they are eighteen months old, putting on a halter, and you are to hang the bridle to the manger, that the colt, by touching, may become used to it, and that he may not be intimidated by the noise of the bits. You are also to break him, when he is three years old, before he is fed with farrago. We shall also know the age<sup>1</sup> of horses, and of all animals that have solid hoofs, and generally of horned

<sup>2</sup> The original implies, that the belly ought to be of a good size and compact.

<sup>1</sup> The time and age, in the Greek.

horned animals, from the shedding of their teeth: for when indeed thirty months are past, the colt sheds his fore teeth, which we call cutters<sup>m</sup>, the two middle teeth below, and two above likewise; and at the beginning of the fourth year he again sheds two others below on each side, and as many above; and he then seems to produce the canine teeth. When four years are completed, and when he enters on the fifth year, he sheds the other teeth, below and above, on each side; and they which are produced are hollow; and when he enters his sixth year, the cavities of the first are filled; when he attains his seventh year, he has all his teeth complete, and they have no hollowness at all. When this period arrives, it is no longer a facility to know a horse's age: but a horse is in general free from disease, if you tie to him the horn of a stag.

## II.—MARKS OF HORSES.

SOME indeed reckon them that have varied eyes among the most useful (as they say Bucephalus, the horse of Alexander of Macedon, was);

P 4

a slender

<sup>m</sup> In Latin, *incisores*.

<sup>n</sup> In respect of colour.

a slender and a short tongue, and the face flat or curved; an elevated crest; a grey colour, one that is not easily discomposed by titillation; a straight neck, full and strong, that is, not short-necked; a belly compressed, and trussed at the flanks; a just proportion; and the veins of all the body plain and full; a colour perfectly black. But Plato approves of white horses, so that the extremes in white and black are recommended: and they also reckon the bright<sup>p</sup> bay, the colour of good horses. It also happens that horses of other colour are frequently good. This is likewise a sign of a good horse; when standing he is impatient, and beating the ground, he meditates to exert his speed.

### III.—CONCERNING THE CURING OF DIVERS DISEASES.

If a horse becomes poor, you are to set before him a double portion of parched wheat, or of baked barley; and you are to give him drink  
three

° *ῥαυχίνα*, having the back part of the neck elevated.

<sup>p</sup> *Φοινικίζοντα*. Aulus Gellius says, that this is the same colour as the spadix, by which the Dorians meant a branch of the palm plucked off with its fruit, which fruit was of a shining red colour.

three times a day: and if he continues to be low in flesh, you are to mix bran with wheat, and you are to exercise him gently; but if he do not eat, they pour on his food solanum<sup>a</sup> and the leaves of polium<sup>b</sup>, pounded and percolated in river water. Having also macerated barley and vetches<sup>c</sup> in water, they set it before him; or, they pound two cyathi of melanthium<sup>d</sup>, and mix with it three cyathi of oil, with a cotyla of wine, and they administer it. You will also cure a nausea<sup>e</sup>, by mixing and administering garlic with a cotyla of wine with oil. If a horse also has the dysuria<sup>f</sup>, we pour down his throat the white of ten eggs, with the ingredients already mentioned. Neither oxen nor horses will be affected with disease, if you tie the horn of a stag to them.

#### IV.—CONCERNING A HORSE IN A FEVER.

You are to cure a horse having a fever in the hot-bath, in the summer; and in the winter, you are

<sup>a</sup> In Greek, *σολανος*. Matth. iv. 67.

<sup>b</sup> Poley.

<sup>c</sup> Orobi.

<sup>d</sup> Nigella, or gith.

<sup>e</sup> Sickness, loathing, &c.

<sup>f</sup> Difficulty in making water.



are to cherish him so that he may not take cold; and you are to give him very little food, vetches or wheat flour; and you are to give him warm water to drink; and you are to rub him with warm wine and oil over all his body; and you are to purge him; and you are to take away blood from his neck, or from the veins about the pharynx\* or the breast, or from the foot. You are also to rub his knees with hot vinegar; and when he seems to be convalescent, you are to wash him with warm water. But if he has a fever, and becomes poor from hard labour, pour down his throat, during three days or more, until he recovers, a cotyla of goat's milk, a measure of amyllum<sup>2</sup>, half a cotyla of oil, four eggs, having mixed with them the juice of pounded purslain. But if he has a fever on account of the flux, of humours of the tonsils, or of the head, you are to foment him; and you are to rub his palate with salt pounded with origanum, and sifted into biff; and you are to warm his feet and knees with hot water; and you are to well rub the parts about the

\* Called by the Romans *infundibulum*, the open and primary part of the gullet.

<sup>2</sup> Starch: the best was the Cretan and Egyptian, made of trimestrian wheat; Matth. lib. ii. c. 94.

the mouth with pounded solanum, and with the lees of wine; and you are to feed him with seawrack, or with grass, without barley. If blood flows from his nostrils, it is proper to pour into them the juice of coriander, or diluted opos<sup>7</sup>.

#### V.—CONCERNING THE OPHTHALMIA<sup>8</sup>.

If the eye is inflamed, you are to apply to it male frankincense, and the marrow of a lamb, a dram of each; a dram of the bones of the cuttle-fish, ten drams of oil of roses, the white of four eggs being mixed with them. Another remedy for an inflamed eye: libanotus<sup>9</sup>, amyllum, Attic honey.

#### VI.—CONCERNING THE LEUKOMA<sup>10</sup>.

You are to mix very fine sal ammoniac with Attic or other good honey, and you are to apply it; or, you are to apply an equal quantity of butter; or, you are to blow in the bone of the cuttle-

<sup>7</sup> Juice of laserpitium.

<sup>8</sup> See book ii. c. 18.

<sup>9</sup> Frankincense.

<sup>10</sup> In Latin, *albugo*, white speck on the eyes. It has many names in English.

cuttle-fish, pounded fine, through a reed: or, you are to anoint it with the root of silphium, pounded with oil, twice a day; or, let the seed of the rocket<sup>d</sup> be blown into the eyes whole, and let it remain until it attenuates and removes the disorder by its pungency.

## VII.—CONCERNING THE NERVES.

You are to pour warm water on the parts affected, and on the head of a horse having diseased nerves: you are then to put in a pot an equal quantity of ox-suet, and myrrh, and sulphur; and you are to make a suffumigation, and to warm the head, which is covered. You are also to be sure to purge the animal, and you are to take blood out of the tail.

## VIII.—CONCERNING THE FLUX OF THE BELLY.

If the belly be affected with a flux, let blood be taken from the veins of the head: let the horse also drink warm water mixed with barley-meal; and if he does not become convalescent, let

<sup>c</sup> By the Romans called *laserpitium*; Pliny, lib. xix. c. 3.

<sup>d</sup> *Ευζυμν.*

let oil be poured into his nostrils. The rind of pomegranate likewise stops a flux, when pounded with Syrian sumach, and exhibited by the mouth;

#### IX.—CONCERNING THE STROPHUS<sup>d</sup>.

You are to wash the horse with warm water, and you are to cover him: then give him five drams of myrrh, six cotylæ of wine, and three cotylæ of oil, percolated together, and divided into three parts: and you are to warm his belly with hot sea-water, or with a decoction of myrtle-berries: and you are to give him the leaves of polium, or abrotanum, mixed with strong black wine; or the rind of pomegranate with water. An equal quantity of parsley and of cucumber-seed is also of service, both being given him in his drink, with an equal quantity of honey and wine; or the seed of cardamomum pounded with water; or the seed of medica<sup>e</sup> is so besprinkled, as barley is, that is served. Horses also that are vertiginous are clystered with a decoction of beet, and forty drams of nitre, and thirty drams of oil. Having also pounded and warmed

<sup>d</sup> Cholic.

<sup>e</sup> Harsh, in the Greek.

<sup>f</sup> Lucerne.

warmed nitre, exhibit it with wine. If you will likewise make water on the ground, and with the clay rub the animal's belly, you will remove the strophus.

#### X.—CONCERNING PNEUMONIA<sup>c</sup>.

SHARP vinegar warmed and exhibited, cures diseases settled on the lungs; or human urine, with twenty drams of melted hog's lard; but you are to take care that it may be genuine, &c.

#### XI.—CONCERNING A COUGH.

It is proper to exhibit in a potion, barley-meal mixed with vetches<sup>a</sup>, or beans, when a cough begins; but when it is a confirmed cough, two cyathi of honey, an equal quantity of pitch, as much oil, four-and-twenty drams of melted butter, with an addition of a moderate quantity of stale<sup>d</sup> hog's lard are exhibited. If it is not thus removed, pound horehound with oil and salt; and when percolated with wine, exhibit it. But some use the juice of horehound and oil, and the  
root

<sup>c</sup> Inflammation of the lungs.

<sup>a</sup> Called *orobi*.

<sup>d</sup> Much used by the Romans, according to Vegetius.

root of wild rue: and some, mixing frankincense with oil, use it.

## XII.—CONCERNING AN UNCERTAIN\* DISEASE.

LET blood be taken from both shoulders, and medicine is thus prepared: a little rue is pounded with the root of lapathum<sup>1</sup>, with three cotylæ of water, with <sup>and</sup> two drams of opoponax<sup>m</sup>, are mixed with them. The beast is to be fed, day and night, with wheat-flour mixed with water, and he is to have some to drink. But if the disease seizes gregarious horses, let the least indeed have three cyathi of garum<sup>n</sup> and oil, and the largest, double the quantity.

## XIII.—CONCERNING DYSURIA°.

SOME lay an onion, when the external coat is removed, to the bladder; others exhibit parsley

\* When the Diagnostics were not sufficiently perfect to give name to the disease.

<sup>1</sup> In Latin, *rumer*.

<sup>m</sup> Sometimes called *heracleum*. It was much used by the Roman farriers, according to Vegetius. Matth. iii. 50.

<sup>n</sup> Brine of fish, or of meat; Matth. l. ii. c. 31.

° Difficulty of voiding urine.

parsley-seed with two cotylæ of wine, or as much onion-seed with wine, or pigeons dung, or the leaves of polium, or dried myrrh<sup>p</sup>, or five drams of nitre, with a pounded head of garlic, with wine. Others indeed use black wine only.

#### XIV.—IF A HORSE VOIDS BLOODY URINE.

HAVING mixed clean bean-flower with the melted suet of a stag and a little wine, let it be poured into the beast's mouth during three days; or, let a cotyla of goats milk, half a mina<sup>q</sup> of amylum, ten eggs, three cyathi of oil, all mixed together, be exhibited.

#### XV.—CONCERNING ULCERATION.

If the spine be wounded, the root of iris is burnt, and, being pounded, it is laid on; or the ashes of pounded hemp, with honey, are rubbed on the parts, having been previously washed clean, with stale urine.

#### XVI.

<sup>p</sup> If the reading is correct, it may mean the bark of the tree from which the myrrh was taken; see Matth. l. i. c. 67.

<sup>q</sup> The Attic mina, with which drugs were weighed, was  
 lb. oz. dwts. grains.  
 1, 2, 11,  $10 + \frac{2}{7}$ , Troy.

## XVI.—CONCERNING INFLAMMATION.

ALL inflammation is cured with salt and oil; or with leaves of polium, burnt and percolated in oil; or with verbasum<sup>1</sup>, boiled with wine, and laid on as a cataplasm.

## XVII.—MALAGMA\* FOR THE JOINTS.

Mix eight drams of frankincense; an equal quantity of galbanum, twelve drams of lees of wine, black resin, nitre, sulphur, four drams of each, a cyathus of Egyptian mustard, an equal quantity of cardamomum, a hundred berries of the bay, a mina of dry figs, a few leaves of the rododaphne, a sufficient quantity of quick lime; and you are to mix the dry ingredients with such things as are moist, and, when laid on a cloth, you are to apply them as a plaister.

## XVIII.—CONCERNING THE MANGE.

—\* You are to rub in equal quantities of tar from the cedar, of resin, of alum, with vinegar, in the sun. Or, when the parts affected are rubbed with hot ashes, you are to wash them till they bleed :

VOL. II. Q you

<sup>1</sup> φλομω.

\* From μαλασθῆναι, to soften.



you are then to anoint them with litharge and alum, well pounded with lentiscine oil. Or, you are to apply aphronitrum<sup>†</sup>, and sea-salt<sup>‡</sup>, and wheat flour, an equal quantity of each, percolated with vinegar. Or, you are to rub in the ashes of the burnt root of capparis, mixed with lard, the parts having been previously washed clean with a lixivium.

#### XIX.—CONCERNING A LEECH.

If a horse swallows a leech, you are to pour down with a horn, some warm oil mixed with wine, while the animal lies in a supine posture. Or, you will cure him by burning bugs near his nose, or killing them in his nostrils; for the leech will either be voided, or it will die. You are to use this for oxen and other animals.

#### XX.—HOW YOU ARE TO CURE THE BITE OF A SCORPION, OR OF SOME OTHER REPTILE.

You are to cover the part affected with cow-dung, or pounded solanum, or with spurge, or with the seed of hyoscyamus, or with the juice of linseed,

<sup>†</sup> Spume of nitre. Matth. v. 39.

<sup>‡</sup> Sea-spume, in the Greek.

linseed, or with alum, or with aphronitrum, or with parched salt: one of these being laid on, will be of utility. But you will cure the animal with water strained through a cloth, and poured into its nostrils. And indeed, in general, the same remedies as are salutary to cattle for the bite of reptiles, almost always cure human creatures. But for partial diseases, in horses, and asses, and mules, bleeding is proper.

## XXI.—CONCERNING ASSES FIT FOR ADMISSION.

WE are to choose asses for admission thus, and we are to raise them as we do horses. But some, acting judiciously, tame wild asses, and they produce very fine foals ; but they are not to be confined, but to be left at liberty. The animal is indeed very easily tamed, and he answers the purposes of tame animals in all services ; and, when once tamed, he does not become wild, as other

▼ When the male was brought to the female, for the purpose of propagation, the Greeks and Romans called it by a name correspondent to the English word *admission* ; hence, in Latin, *admissura, equus admissarius*. Had they used the term *breeding*, it would have been inadequate to express the idea ; because it is, in strictness of language, only applicable to the female.

animals do, and his offspring grows like himself. It is proper for these animals to cover a few days before the summer solstice. The female ass goes with young twelve months. But it is better for mares to be covered by assés, than female asses by horses. Some indeed, wishing to have a superior breed, put asses colts under mares, for they will be fed with better milk; and being brought up with them, they will have a more firm attachment for the mares from habit, so that they will readily cover them. Let the time of sucking be two years, as it is with regard to horses. But asses are fit for admission from three to ten years; and you are to take care, that they that are to cover may be of a handsome make, for their offspring will resemble them. Some being more than consistently studious of beauty, put on the ass, or on the horse, or any other animal for admission, a garment of such a colour as they wish the colt to have; for such as the colour of the garment may be, with which the animal for admission is covered, such will be the colour of the colt. You will cure lame asses, if you wash all the foot with warm water, and clean it all around with a scraper: and when you have done this, pour some suet over it, especially that of a goat; or, if you have not it, ox suet, with hot stale urine; and do this until he is cured.

XXII.

## XXII.—CONCERNING CAMELS.

DIDYMUS says, in his *Georgics*, that the camel goes without water during three<sup>v</sup> days, and that it is cured of the mange by the pitch<sup>z</sup> of cedar. But the camel does not cover<sup>y</sup> its dam, nor its sister foal. The same Didymus says, that a Bactrian camel was impregnated by wild boars that were in the same pastures with it on the Indian mountains: and from the boar and from a she-camel, is produced the camel having two bunches on its back, as the mule is from the horse and the ass. The camel that is thus produced, bears many marks of its sire; for its hair is thick, and it is powerful with regard to strength, and it does not stumble in miry places, but is kept up by its powerful strength, and it carries double the burden that other camels do. They indeed call those Bactrian camels with propriety,

Q 3

because

<sup>v</sup> سبعة is one of the Arabic names of a camel, because it goes without water seven days.

<sup>z</sup> *Cedria*. It is, by some of the ancient authors, called the *tar of cedar*.

<sup>y</sup> This was a prevailing idea among the ancients, probably to point out that incest was odious and unnatural. See *Arist.* vol. i. p. 953.

because they were first produced among the Bactrii\*. I have seen dromedaries\* contending with horses on the course, and overcoming them. Florentinus indeed says, in his Georgics, that he saw a camelopardalis at Rome: and I have seen a camelopardalis at Antioch<sup>b</sup>, brought from India.

\* They lived between the Caspian Sea and Mount Caucasus.

\* This animal was called by the Greeks, *δρομας καμηλος*.

<sup>b</sup> In Syria, between Sidon and Mount Taurus.

BOOK

## BOOK XVII.

## HYPOTHESIS.

These things are in this Book, being indeed the Seventeenth of the Select Precepts concerning Agriculture, and comprising the arrangement concerning the admission of the herd, and the breeding and rearing of it, and the various means of curing it.

## I.—CONCERNING COWS.

**T**HE cows are not to be permitted to be full fed, during thirty days before admission ; for the poorer<sup>e</sup> they are, so much the more will they be adapted for breeding.

## II.—CONCERNING COWS, OR HEIFERS.

You are to choose well-made heifers, with the body of due length, of proportionable breadth, with good horns, wide foreheads, black eyes ;

Q 4

having

<sup>e</sup> So say Colum. vi. 24, 3 ; Varro, ii. 5 ; Virgil, G. iii. 129.

having the jaws<sup>d</sup> compact, a well-formed flat nose, not crooked; having open nostrils, a long and a strong neck, a good breast, having blackish lips, a deep flank, a wide back, a large eye; a long tail reaching to the heel, well covered with hair; short arms, straight legs, strong, rather thick than long, not rubbing against each other; the feet not dilated in walking, nor the hoofs spread, the toes<sup>e</sup> perfect and equal, the hide soft to the touch, and not hard as wood. They also approve of those as very good, that are of a yellowish colour, and have black legs, as being of a generous breed. It is then indeed a good thing that a cow should be distinguished by all these gifts of nature, at least by many of them. The beasts in the herd know the voice of the cow-herd, and, when called by their names, they understand him, and they obey the command of their leader.

### III.—CONCERNING BULLS.

You are not to permit the bulls to feed with the cows during two months before admission; and

<sup>d</sup> *Γαδο*, signifies the prominent part of the cheek, when applied to the human feature. It was called by the Romans *mala* and *bocca*, the last of which they borrowed from the Gauls.

<sup>e</sup> Nails, in the Greek.

and you are to give them plenty of grass; and if you have not a sufficient quantity, you are to give them <sup>chiche peas</sup> bitter vetches\*, or orobi, or macerated barley. They are not fit for admission when less than two years old, nor when they are more than twelve years of age: and the same may be said in respect of the cows. It is indeed proper to separate them from the cows for the space of two months; and you are to drive them to the herd, imposing no restraint on their desires.

#### IV.—THAT THE COWS MAY NOT BECOME WEAK.

HAVING macerated ground vetches, give the cows them to drink every month. You are also to cure the wounds of cattle, by pounding and applying the wild mallow.

#### V.—CONCERNING ADMISSION.

THE middle of the spring is the season fit for admission; and if the cows do not receive the bulls, you are to pound the inside of a squill, that is, the most tender part of the squill, and as  
one

\* This kind was called *erum* by the Romans.



one might say, the choicest part, with water, and you are to apply it. If the bulls are also remiss, burn a stag's tail, and pound it; and, having mixed it with wine, apply it, and it will produce a due effect. This indeed would happen not only in respect of bulls, but with regard to other animals, and even to the human race. Oil being applied<sup>z</sup>, is inimical to stimulation. The herb also called *polyspermos* and *polygonos*<sup>h</sup>, will make animals more prolific.

#### VI.—CONCERNING THE FORE-KNOWLEDGE OF THE PROGENY.

LET persons who wish to know whether a cow will produce a bull or a cow-calf, take notice. If<sup>i</sup> the bull indeed descends to the right, the offspring will be of the male kind; but if to the left, it will be of the female race: and if you wish to have a bull-calf, restrain the seminal effusion from the<sup>k</sup> left side at the time; and if a  
cow-calf,

<sup>z</sup> Smeared, or rubbed, in the Greek.

<sup>h</sup> In Latin, *polygonum*. See Matth. iv. c. 4.

<sup>i</sup> See Colum. vi. 24. Varro, ii. 5. Pliny, viii. 45.

<sup>k</sup> See Columella, vi. 28; Palladius, iv. 11. Hippocrates made the same observation, *De Superfat.* p. 265.

cow-calf, on the right side. But some have recourse to the aid of nature; and if a person wishes to have a bull-calf, he contrives to have admission performed when the north<sup>1</sup> wind blows; but if a cow-calf, when the south wind blows.

#### VII.—CONCERNING THE ŒSTRUS<sup>a</sup>, WHICH IS CALLED MYORS,

WE know that the Œstri, that sting the cows, make them distracted; but they will not come near them, if, having pounded the berries of the bay, and boiled them in water, a person sprinkles it over the place where they are fed; for the Œstri will fly away, from a natural antipathy: and if cows are stung by them, they also pound ceruse with water, and wash them with it.

#### VIII.—CONCERNING THE REARING OF CALVES.

WE are to feed the cows that give milk, with cytissus or medica; for, being thus fed, they will have

<sup>1</sup> See Aristotle *de Generatione Animal.* lib. iv. c. 2.

<sup>a</sup> Called by the Romans *asilus*, a flying insect like a wasp, without a sting or proboscis, which makes a violent whizzing. See *Esperienze ed Osservazioni da Vallisneri.* Padua, 1723, 4to.

have more milk. We are also to cut<sup>a</sup> the calves, when they are two years old; for it is not proper to cut them later. We are also to apply<sup>b</sup> to the wounds, ashes and litharge; and after three days, tar and ashes, mixed with a little oil.

**IX.—THAT WORKING CATTLE MAY NOT BE  
TIRED.**

HAVING boiled oil and terebinthine<sup>c</sup> resin, anoint their horns.

**X.—FROM WHAT AGE COWS ARE FIT FOR  
BREEDING.**

THEY are not fit for breeding before they are two years old, that they may calve when they are three years old; but if they calve when they are four years old, it is better. A cow is in general fit for breeding during ten years. Bulls are in the perfection of vigour from the age of three years. The season indeed for the admission of quadrupeds

<sup>a</sup> Columella, vi. 26. Pallad. vi. 7.

<sup>b</sup> The Greek says, the application was made in the form of a cataplasm.

<sup>c</sup> The resin of the terebinthus. This is now called *turpentine*.

pedis is from the rising of the Dolphin<sup>2</sup>, that is, about the beginning of the month of June, during forty days; and a cow goes with young ten months. But you are to cast out of the herd those that are steril, and feeble, and superannuated; for care bestowed on things that are useless is of no avail.

XI.—THAT CATTLE MAY NOT BE INFESTED BY FLIES.

HAVING pounded the berries of the bay quite fine, and having boiled them with oil, anoint the cattle, or rub them with their saliva. Bulls having their nostrils anointed with oil of roses, become vertiginous.

XII.—TO MAKE OXEN FAT.

You will make oxen fat, if you shred and macerate cabbages in sharp vinegar, and set them before them the first day they come from pasture; having then mixed sifted chaff and wheat-bran during five days, and on the sixth four cotylæ of ground barley, you are gradually to increase their feed

<sup>2</sup> On the fourth of the ides of June; Colum. xi. 2.

<sup>3</sup> Matth. prescribes the method of making it; lib. i. c. 42.

feed the six following days. And in the winter indeed you are to feed them about the cock-crowing; and a second time, about the dawn of the day; and you are to give them drink; and the remainder of their food you are to give them about the evening. But in the summer you are to give them their first feed at the break of day, and the second at noon, you will then give them drink; and you may then give them their third feed about the ninth hour; and you are to give them drink a second time: and in the winter indeed give them warm water, but in the summer, that which is lukewarm. Wash their mouths also with urine, removing the inherent phlegm, and rid the tongue of worms, taking them out with a forceps, for worms breed in their tongues; and rub their tongue thoroughly with salt; and it is proper to pay attention to their litter.

**XIII.—CONCERNING THE CURE OF CATTLE, AND THAT THEY MAY NOT SWALLOW ANY HARD SUBSTANCE.**

LET neither hens nor swine get to the crib; for the dung of each of these, if it be eaten, is injurious to the animal; and a cow will not swallow  
any

any hard substance, if you will hang the tail of a wolf on the crib.

#### XIV.—CONCERNING AN UNKNOWN DISEASE.

ALL the diseases of animals are almost unknown; for how is a person to understand them, or of whom can he inform himself of the internal diseases of the animal? If you then pour into his nostrils pounded silphium with genuine black wine, you will cure every unknown disease. Democritus indeed advises to put the root of squill and of buckthorn in the drink of cattle, during fourteen days, at the beginning of the spring. But if the beast labour under a well-known disease, you will thus cure him: macerate mountain-sage and horehound in their drink, an equal number of days, and exhibit it, and you will effect a cure. This is indeed of service, not only to oxen but to other beasts. Salt also mixed with their food is of consummate utility; but the best and the most wholesome thing is amurca, given gradually\* with their water. The grass medica is also of utility.

#### XV.

\* A little at first, lest a great quantity make the beast loathe it.

### XV.—CONCERNING THE HEAD-ACHE.

It is first proper to know that the animal has a head-ache. When he therefore hangs down his ears and does not eat, he has the head-ache. His tongue is therefore well-rubbed with thyme pounded with oil, and with garlic, and with fine salt; and crude ptisane, reduced to solution with wine, will be of utility. If you also take bay-leaves, as many as will fill your hand, and put them into the beast's mouth, or the rind of pomegranate, you will be of service to the animal. If you also pour into the beast's nostrils a small<sup>t</sup> quantity of myrrh with two cotylæ of percolated wine, you will cure him.

### XVI.—CONCERNING A DIARRHŒA<sup>u</sup>.

HAVING pounded the leaves of buckthorn, and having covered them with asphaltos, give them the beast to eat. Some indeed give the animal the pounded leaves of pomegranate covered with polenta. Others exhibit two cotylæ of polenta, and

<sup>t</sup> A quantity of the size of a bean, in the Greek.

<sup>u</sup> Too frequent a discharge of the contents of the intestines.

and half the quantity of the flour of parched wheat, mixed with water.

## XVII.—CONCERNING INDIGESTION.

A BEAST labouring under indigestion is known from not eating, and from frequent eructations, and from moving his limbs with a kind of contortion, and from a dejection of spirits: We are therefore to cure him, by giving him warm water to drink; and a quantity of cabbage, well macerated in vinegar, to eat. But some, boiling the tender parts of the cabbage, and pounding them with oil, pour them into the mouth with a horn, and, covering the beast with warm clothes, they force him to walk: this is not only of service to oxen, but to all cattle. Others indeed, pounding the leaves of the wild olive, or the tender shoots of other trees, and pouring water on them, percolate them; and they then exhibit six cotylæ in the space of two days.



XVIII.—CONCERNING THE BUPRESTES<sup>v</sup>.

SOME pour oil into the beast's nostrils; others likewise pour the fruit of the wild fig-tree, macerated in water, into the beast's nostrils.

## XIX.—CONCERNING THE COLIC.

AN ox that has the colic, does not remain in the same place, nor does he touch his provender, but groans. You are therefore to set little provender for him; and you are to prick a vein<sup>w</sup> near the hoof, that the blood may flow. Some indeed open a vein in the tail, that the blood may flow, and they tie on a cloth. Others, mixing onions and salt, and having made them of a proper form, apply them internally, and they compel the beast to run. Others pound and dissolve nitre, and pour it into the beast's mouth.

## XX.

<sup>v</sup> Sometimes swallowed by cattle among their feed, and of dangerous tendency. See Matth. lib. ii. c. 55, and Pliny, lib. xxx. c. 4.

<sup>w</sup> The flesh, in the original.

## XX.—CONCERNING AN OX THAT HAS A FEVER.

AN ox that has a fever does not go to his provender; he bends his head downward; sheds tears; he<sup>\*</sup> has what is called *gramia*; he is hollow about the eyes. You are then to cure such a beast thus: take some agrostis from shady situations, and having washed it, give it him to eat; or vine leaves. You are also to give him very cold water to drink, not in the open air, but chiefly in a shady place: you are also to wipe his ears and his nostrils, with a sponge dipt in water. Some burn his face with a cautery, and the parts under the eyes; and they sponge them twice a day with stale urine, until scales<sup>†</sup> fall off, and the wounds are covered with a scar. The ears are also lanced, that blood may flow. Some, having mixed polenta with wine, give it the beast to eat; and some wash him with brine, and keep him warm with clothes. Some also give cytissus with wine: and this is useful not only to oxen, but to other cattle.

R 2

XXI.

\* *Λημας, εχην.* The sordes of the eyes were, by the Greeks, called *λημαι*; and by the Romans, *gramia*.

† *Εσχαρι*, incrustated matter, adhering to a wound from the act of cauterizing, was called *εσχαρι*.

# XXI.—CONCERNING AN OX THAT HAS A COUGH.

HAVING macerated ground barley, and the finest chaff, and three cotylæ of ground vetches<sup>a</sup>, divided into three parts, give them the beast to eat. Some also pound the herb artemisia<sup>a</sup>, and dissolve it in water, and press it; and they exhibit it during seven days before the beast touches his provender.

# XXII.—CONCERNING SUPPURATION.

IF an ulcer be suppurated, it is proper to clean it, and to wash it with warm ox-stale, and to wipe it with wool; then to lay on a plaister of fine salt and tar.

# XXIII.—CONCERNING LAMENESS.

IF an ox be lame, on account of the part being affected with cold, it is proper to wash the foot, and, after opening the affected part with a knife, to foment it with stale urine; then throw on some salt,

<sup>a</sup> The *orobi*.

<sup>a</sup> In French, *armoise*; Matth. iii. 111.

salt, and wipe it with a sponge, or with a rag: it is then proper to drop on the part affected goat or ox suet, melted with a hot iron. But if he be lame by treading on a sharp stake, or on such a thing, you are indeed to apply other things likewise; and, having melted wax with stale oil, and honey, and the flour of vetches, and having permitted it to cool, lay it on the ulcer; then take some fine sifted shell powder, and figs, or pomegranates pounded and mixed, and spread them on a cloth, and lay them on; and tie them carefully that nothing may get in, until he may be able to stand; for thus he will be cured: and on the third day dress it. And if he be lame through an impetuous flux of matter, you are to warm the part with oil and sweet wine boiled; then you are to lay on hot omelysis<sup>b</sup>: and when it is tender, you are to open it; and you are to lay on the part, when washed and opened, leaves of the lily, or squill with salt, or polygonum, or pounded horehound.

#### XXIV.—CONCERNING THE MANGE.

THEY cure the mange, and eruptions, by rubbing them with stale ox-stale, and with butter:

R 3

and

<sup>b</sup> xiv. 7.

and some lay on resin, or tar with wine; and so cure them.

### XXV.—CONCERNING BILE<sup>c</sup>.

You are to cauterize the limbs of the ox down to the hoof, and constantly to foment them with hot water; and you are to cover him with clothes.

### XXVI.—CONCERNING A CHILL.

You are to exhibit black wine that has been percolated.

### XXVII.—CONCERNING WORMS.

PERSONS who wash the ulcers with cold water, kill the worms<sup>d</sup>.

### XXVIII. — CONCERNING THE LOATHING OF PROVENDER.

You are to sprinkle the provender with a sufficient quantity of amurca; and, having mixed a proportionable quantity of resin, or of turpentine, smear the beast's horns to the roots.

### XXIX.

<sup>c</sup> Col. vi. 30. Vegetius, iii. 50.

<sup>d</sup> *Ευλας*, they were bred in ulcers

XXIX.—CONCERNING WATERY<sup>c</sup> PUSTULES.

It is proper to throw the ox down into a supine posture, and, having raised his head, to examine his tongue, if it has watery pustules<sup>f</sup>: and it is proper to burn these with pointed hot irons; then to rub the ulcers with pounded leaves of the wild olive, and with salt, or with fine salt and oil, or with butter and salt; or to give him the root of the wild cucumber dry, pounded with figs, to eat; or to give him two cotylæ of polenta, and an equal quantity of flour of parched wheat, macerated in wine.

<sup>c</sup> A wrong title seems to be inserted to this chapter, in the original.

<sup>f</sup> Called Φλυκταιναι, in Greek.

## BOOK XVIII,

## HYPOTHESIS.

These things are in this Book, being indeed the Eighteenth, and comprising the arrangement concerning the choice and approbation of sheep, and concerning their admission and breeding, and the cure and care of them.

I.—CONCERNING THE CHOICE OF SHEEP, AND  
THE APPROBATION OF THE MALES, AND OF  
THE FEMALES.

**T**HE best ewes are they which produce much and fine wool, long and thick indeed over the whole body, and especially about the fore and the hind part of the neck ; and such as have all the belly covered with plenty of wool, and such as is very soft, and of the same colour. It is also proper that they may have good eyes, well-proportioned legs ; for these are the best for rearing lambs. The rams also ought to be of a compact make, of a handsome appearance, with grey eyes, foreheads thick with hair, good horns of a moderate size, ears covered with thick wool, a  
wide

wide back ; having the testes large ; having no difference of colour on the body. You are to approve the age of the rams and ewes when they are three years : and one ram is sufficient to cover<sup>a</sup> a certain number of sheep. One man, with the assistance of a boy, will be sufficient to have the care of a hundred and twenty sheep. A sheep also goes with young five months. But the best sheep are they that have straight hair ; for they assert, that those that have curled hair are by nature weak.

## II. — CONCERNING THE CARE AND THE PRESERVATION OF SHEEP,

THE cotes ought to be numerous and rather capacious ; and you are to make them warm and dry, and the pavements shelving ; and you are to make them level, pitching them with stones. You are also to set the cribs at the upper end of the pavement, and<sup>b</sup> you are to fix a paling over them, that the sheep, taking their provender, may not leap over them. In the summer indeed they are fed

<sup>a</sup> My copies say *v. i. e.* fifty.

<sup>b</sup> By the change of one letter, this part of the sentence would run thus ; “ and you are to fix lattice over them, that the sheep taking their provender may not tread upon it.”



fed in the open air, and they are folded out : but when the sun is very powerful, let them be driven into a shady place ; but not *vice versâ*, for<sup>1</sup> the cold is very hurtful to them. But that beasts that are pernicious to them, may not get<sup>2</sup> to them, you are to make a fumigation of women's hair in the cotes, or of galbanum, or of hartshorn, or of goats hoofs, or of their hair, and of asphaltus, and of cassia, or of conyza, or of something else that has a strong smell, by themselves, or even pounded with more ingredients. You are to use for the litter of the sheep, calaminth<sup>1</sup>, and asphodel<sup>m</sup>, or pulegium, or polium, or conyza, or abrotonum ; for noxious beasts fly from such things. You are also to set before them, for provision, cytissus, and medica, or fenugreek, or oats<sup>n</sup>, and the refuse of pulse, and barley-chaff : and these are improved, when besprinkled on the threshing-floor with brine. The deciduous fruit of fig-trees, and their leaves, when

<sup>1</sup> There seems to be some defect in this place.

<sup>2</sup> Creep, in the Greek.

<sup>1</sup> Matth. l. iii. c. 36.

<sup>m</sup> Matth. l. ii. c. 164.

<sup>n</sup> This grain is seldom mentioned by the ancient agricultural writers. Pliny says that it was much used by the Germans ; l. xviii. c. 17.

when dried, are fit provisions for sheep. You are also to drive them out to pasture indeed in the summer before sun-rising, while the dew remains on the ground ; and in the winter, when the frost and all the dew have disappeared : and you are always to contrive that they may have the sun on their hind parts. Let the number of the flock also be always uneven, as having a certain natural power for the preservation and safety of the flock.

### III.—CONCERNING ADMISSION AND YEANING.

You are to separate the rams two months before admission, and you are to give them a more abundant share of provision ; and when they acquire a degree of corpulence and strength, you are to send them away to the ewes : and the proper age of rams for admission is from two to eight years ; and it is the same with regard to the ewes. It is also proper to know how the rams rather follow the old ewes, which are covered with greater facility ; and then the young ones, But they are not to be covered too late, for it is hurtful. Some indeed, wishing to have lambs and milk almost all the year, contrive to have the season of admission at different periods throughout the

the year. The rams are indeed in proper tone for admission, when onions are mixed with their food, and the herb polyphoros<sup>o</sup> and polygonus, which rouse other cattle for the office of admission. But you are not to compel them to use waters to which they have not been accustomed. If a person indeed wishes to have more males produced, let him send in the rams when the flock feeds, when the north wind<sup>p</sup> blows, on a fine day; but if he is desirous of having more ewe lambs, let him do this when the south wind blows. This also seems congenial to these and to all other animals. If restriction<sup>q</sup> is also practised on the right side, as it has been suggested with regard to oxen, an ewe lamb will be produced; but a male, if the restriction is on the contrary side. You are to confine the lambs in the cotes by themselves, after they have had milk enough; for when they are with the ewes, they tread upon them. You are not to milk the ewes during two months; and it will be better if you do not milk them at all, for thus the lambs will be very well fed. It is proper to dispose of the lambs from those that  
lambled

<sup>o</sup> See book xvii. 5.

<sup>p</sup> The Greek expresses, when the north wind blows against them, and the south wind behind them.

<sup>q</sup> See xvii. 6.

lambled for the first time, as being unfit for saving.

IV. — CONCERNING SHEEP, THAT THEY MAY FOLLOW THE SHEPHERD.

STOP their ears with wool.

V. — THAT A RAM MAY NOT BE PUGNACIOUS.

PERFORATE<sup>r</sup> his horns near the ears.

VI. — WHEN A SHEEP IS WITH YOUNG, THAT YOU MAY KNOW WHAT COLOUR THE FÆTUS HAS.

OPEN<sup>r</sup> the sheep's mouth: if you find her tongue black, she will produce a black lamb; and if white, she will produce a white one; and if variegated, the offspring will be variegated.

VII. — THAT LAMBS MAY NOT BE UNHEALTHY.

FEED them with ivy during seven days, and they will not be unhealthy.

VIII.

<sup>r</sup> Colum. vii. 3. Pliny, viii. 47.

<sup>r</sup> Pliny viii. 47.

VIII.—AT WHAT TIME, AND IN WHAT MANNER,  
YOU OUGHT TO SHEAR YOUR SHEEP.

It is proper to shear your sheep, neither<sup>t</sup> when it is cold, nor in the summer season, but in the middle of the spring; and you are to smear the wounds that are made in shearing, with tar, and the rest of the body with oil and wine, or with the juice of bitter lupines boiled: but it is better to smear them with an equal quantity of wine and amurca, or with oil and white wine, mixed with wax and suet; for this is not hurtful to the wool, and it is a preventive against the mange, and an impediment to ulceration. It is likewise proper to observe that they may be sheared, having been well cleaned, after the first<sup>u</sup> hour, the dew that fell on the wool during the night having been well dried, more<sup>v</sup> properly in the sun; for when a sheep sweats while it is sheared, the sweat is taken into the wool, and it becomes of a better colour, and softer.

IX.

<sup>t</sup> Columella says that the same period cannot be observed in all countries; vii. 4. 7.

<sup>u</sup> Severn o'clock.

<sup>v</sup> Varro, ii. 11.

## IX. — CONCERNING SHE-GOATS AND HE-GOATS.

GOATS love mountainous situations: and this animal resembles the sheep in many points; for it is covered in the same seasons, and it goes with young five months as sheep do. But it generally produces two at a birth, and it cherishes its young, and it makes no trifling returns from milk, and from cheese, and from its hair. The hair is indeed useful for making ropes and sacks, and things of this kind, and for nautical purposes, for things made of it are neither rent with facility; nor do they naturally rot, unless they are greatly neglected. But it is necessary to select for breeding such as are of a compact make, large, and muscular, and having the skin indeed smooth, thick hair, and having large and ponderous udders; for these are best for keeping: the animal naturally ill bears the cold, as it is always feverish; and if the fever leaves them\*, they die. From the he-goats they select such as are large, and such as have a good flank, and large hips<sup>z</sup>, thick, long, white hair, having the back and the fore part of the neck short and thick, and

\* The transition to the plural, as in the Greek.

<sup>z</sup> ἰσχία mean the hip-bones.

and the weseand of due length. The best time for admission is before the winter solstice. A he-goat will not go away, if you cut off his beard.

**X.—THAT GOATS MAY PRODUCE MUCH MILK.**

GIVE them cinque-foil to eat during five days before they drink. Goats produce much milk, if you tie dictamnus about their bodies.

**XI.—THAT SHEEP AND GOATS MAY NOT BE AFFECTED BY PESTILENTIAL DISEASE.**

HAVING well pounded the stomach of a stork with water, you are to exhibit a spoonful to each of them.

**XII.—CONCERNING MILK, AND THAT CATTLE MAY PRODUCE MUCH MILK.**

ALL cattle produce much milk, besides cherishing the foetus, if they eat cytissus, or if you tie dictamnus round their bodies<sup>7</sup>. Milk warmed over the fire, and stirred with a sprig of the fig-tree,

<sup>7</sup> Bellies, in the Greek.

tree, is coagulated. Oxygala\* also poured on oil, or on the leaves of terebinthus, remains mellow.

### XIII.—CONCERNING THE CURE OF SHEEP.

It is proper to take care that the sheep may not fall into a pestilential disease at first. At the beginning of the spring, then, you are to mix mountain sage and the herb horehound, pounded together, in their drink, for fourteen days. You are to do this likewise in the autumn, the same number of days: and if the disease overtakes them, you are to make use of the same things. The grass of cytisus also being eaten, is of service; and so are the tenderest roots of the hardest *calamus*, when macerated in their drink. It is likewise necessary to remove the beasts that are sick to another place, that those that are sound may not herd along with them, and that they, partaking of other water and air, may become convalescent.

VOL. II.

8

XIV.

\* Milk that was turned. Columella prescribes the method of making it, xii. 8. Galen says that cheese was made with it.



## XIV.—CONCERNING THE TAKING OF WOLVES.

You are to take wolves thus: Blenni\* are small sea-fish, which some call *lupi*; these contribute to the taking of wolves in this manner: having caught a considerable number of them, pound them quite fine in a stone or wooden mortar; and, having made a very large coal-fire on the mountain which the wolves inhabit, when the wind blows, take some of these fish and lay them on the fire; and having mixed the blood, and the flesh of lambs cut quite thin, add them to the pounded fish, and withdraw from the place; for when there is a strong smell from the fire, all the wolves that are near will flock to the place: and when they have partaken of the flesh, or of the fumigation, being stupified, they fall asleep; and when you find them in this torpid state, kill them.

## XV.

\* Hippolitus Salvianus says, "Two blenni are hardly taken in the Roman sea in a year; but they are found more frequent on the Greek coasts." They are found on the English coasts. Mr. Pennant was the first who gave this fish an English name; class iv. s. 90.

## XV.—CONCERNING THE MANGE.

THE mange will not seize the sheep, if a person anoints them, after the shearing, with the things we have mentioned. But if this happens from your neglect, you are to cure it thus: Fresh *amurca* is percolated, and the water in which bitter lupines have been macerated, and the lees of white wine, an equal quantity of each being mixed, are warmed in a vessel, and the sheep being anointed remains for a couple of days; and on the third day you are to wash it with sea-water, or with warm brine, and afterwards with river-water. But others pour on the seeds of the cypress with water. Some also rub on cyperus, pounded with ceruse and butter. Some, when an ass has staled on the road, rub on the clayey consistence. Some also, acting more judiciously, do not apply any of the remedies already mentioned for the mange, before the infected animal is shorn, and previously washed with stale urine. Yet in Arabia they are satisfied with the application of the *cedria*<sup>b</sup>, as in the cases of camels and elephants. You will also cure the mange of sheep by washing them with urine, and anointing them with sulphur and oil.

s 2

XVI.

<sup>b</sup> The tar of cedar.

XVI.—CONCERNING THE PTHEIRIASUS<sup>c</sup>.

IF sheep have vermin or ticks, you are to pound the roots of maple, and to boil them in water; and you will then divide the wool from the head to the loins, and you are to pour this on warm, until it finds its way over all the body. Some also use cedria only. Some likewise prepare the root of mandragora<sup>d</sup> in the same manner; but you are to take care that they may not taste it, for it is pernicious. Others indeed make a decoction of the root of cyperus, and wash the sheep with it.

XVII.—CONCERNING DIVERS DISEASES.

IF the burning heat of the sun hurts the sheep, and they incessantly fall, and do not eat, you are to press out the juice of wild beet, and to exhibit it; and you are also to compel the sheep to eat the beets. If they have a difficulty in breathing, you are to cut their ears with a knife, and you are to remove them to other situations. If they cough, you are to pour almonds, cleaned  
and

<sup>c</sup> *Morbus pedicularis* of the Romans.

<sup>d</sup> Matth. vi. 16.

and pounded, and mixed with three cyathi of wine, into their nostrils. If they swell from unwholesome pasture, you will cure them by taking away blood; the veins above the lips being opened, and those that are under the tail, near the rectum; you are also to exhibit a cotyla and a half of human urine. If they likewise eat worms with their grass, you are to use the same remedy. If they swallow a leech, you are to give them sharp vinegar, warm, or oil. If they have an abscess that is apparent, you are to open it; and you are to pour into the wound fine parched salt with tar. If they are bit or stung by some venemous reptile, you are to give them melanthium with wine; and you are to prepare and to give them such things as we have prescribed for oxen and other beasts. Wolves will not attack cattle, if you make the shepherd carry a squill about him.

### XVIII.—CONCERNING HERDS OF GOATS.

WE will treat of the care of goats, as we have done in relation to sheep, with regard to the rearing of them, and their diseases; and we must not pass over what is peculiar to them, for they are not fed together in a flock as sheep are, but they are generally dispersed, and they wantonly

skip one from another in the pastures; and they delight in precipitous situations. But it is clearly demonstrated, from this circumstance, that the goat has a greater share of understanding than other dumb animals; for when it is affected with a dimness of sight, it goes to the oxyschænos\*, and pricks itself.

#### XIX.—CONCERNING THE MAKING OF CHEESE.

MOST persons coagulate the milk with what some call *the juice*, though most farmers call it *rennet*, and the best is from kids. Parched salt also coagulates milk, and the juice of the fig-tree, and its tender shoots and leaves, and the fibres which spring on the tops of artichokes, which are unfit for eating; and pepper, and the pellicle of the domestic fowl, which, lining the stomach, is destined for the fæces. Cattle feeding on the willow will produce thick and better milk, and better still if they feed on cytissus. Milk keeps during three days, if the day before you remove it, you pour it into a vessel and boil it, and pour it

\* Pliny, xxi. 18. This author takes notice of the goat's curing a cataract, by pricking it with the bramble, viii. 50. This sagacity of the goat is mentioned by other Greek authors. *Antiphili Epigramma Anthol. Gr. i. 29, 2.*

it into another vessel, stirring it with ferula<sup>f</sup>, or with a reed, until it cools. If you also sprinkle a little salt over the cheese, it keeps mellow the longer, with the seed of cnicus<sup>g</sup> with warm water, or with warm honey laid on it. Cheese also keeps when washed with river-water, and dried in the sun, and put in earthen vessels with thymbra<sup>h</sup> or thyme, the cheeses being separated one from another as much as possible; sweet wine vinegar or oxymel being then poured on them, until the liquor gets in and covers the whole. Some indeed, having put cheese into sea-water, preserve it. Cheese being put in brine, keeps white; but more firm and of a more pungent taste, when smoke-dried. Every kind of cheese seems to keep better, if it be put among pulse, and especially the chichling-vetch and peas: and if it is old, or hard, or of a bitter taste, you are to macerate it with omelysis (and omelysis is meal made from barley, that has not been parched), and you are to put the cheese in water; and you are then to take away what is on the surface.

s 4

XX.

<sup>f</sup> Fennel-giant.

<sup>g</sup> Carthamus, or bastard saffron; Matth. iv. 182.

<sup>h</sup> In Latin, *satureia*; Matth. iii. 38.

## XX.—CONCERNING THE PROVING OF MILK.

You are to prove milk, whether it has water, by putting in the oxyschænos and taking it up, and dropping the milk on your nail. If indeed it immediately flows off, it is mixed with water ; but if it remains, it is not adulterated.

## XXI.—COMPENDIOUS PREPARATION OF MELCA.

WHAT is called *melca* will be readily prepared and of a superior quality, if you pour sharp vinegar into fresh earthen vessels, and set them on hot cinders, or over a gentle fire, that is, on coals ; and when the vinegar has boiled a little, take it off the fire, that it may not be absorbed by the vessels : put the milk into the same vessels, and set them in a cupboard or a closet, where they may remain unmoved ; and on the day following you will have a good quantity of *melca*, much better than what is prepared with much art. Change the vessels after the first or second using.

BOOK

## BOOK XIX.

## HYPOTHESIS.

These things are in this Book, being indeed the Nineteenth concerning the Select Precepts of Agriculture; and comprising the arrangement concerning the cure and the care of dogs, and concerning hares and stags, and swine; and concerning the salting of meat.

## I.—CONCERNING DOGS.

**W**E are to provide dogs of a generous breed for the protection of the flock; and these are not without their marks, having indeed large bodies, and being powerful in respect of strength, and of no mean sagacity, endued with a deep and terrific<sup>†</sup> voice; and when a person approaches, not excited by a rash and undesigning force, but deliberating where it is proper to make their attack; for such as these are also stronger and more difficult

<sup>†</sup> The Greek word implies it was to be so terrific as to affect the person that made his approach, as if he was knocked down,



ficult to be overcome. You are also to defend dogs for the protection of the flock, by fixing a piece of leather<sup>\*</sup> about their necks; and to secure the wind-pipe and all the pharynx<sup>1</sup>; and you are to mount it with iron nails; for if a beast hurts any of these parts, it will kill the dog; but if it bites any other part, it will only make a wound. It is also necessary to adapt the breed and the age of the male and of the female, and to take care that the dogs, that are from the same bitch, may not propagate from each other. We are also to feed the breeding-females, not with wheat but with barley bread, for this is of the most nutritious quality: and having boiled the bones of sheep without the flesh, we are to set them before them, that the marrow from the bones may make the liquor palatable and rich, which we are to pour on the bread, when it has been repeatedly crumbled, and to set before them. We are also to set before the bitches that have pupped, barley-meal mixed with cow's or goat's milk, and some of the boiled bones, as it has been already mentioned.

\* The Greek says, raw leather, *i. e.* that had not been dressed.

<sup>1</sup> The parts contiguous to the upper end of the wind-pipe; though the word properly means, what the Romans called *infundibulum*.

tioned. We are also to assist the new-whelped pups, for the milk of the dam is not sufficient for them; but we are to give them bread to eat, having soaked it in milk<sup>m</sup>, and in the liquor made from the bones: and we are to lay before them the bones, that they may strengthen and sharpen their teeth.

## II.—ANOTHER CONCERNING DOGS.

THEY approve dogs, such indeed as have large ears, and large bodies, black eyes, the nose of the same colour, blackish or reddish lips, and sharp teeth, large heads, wide breasts, long limbs, firm and thick arms<sup>n</sup>, straight legs, but if not so, bending inwardly rather than outwardly; large feet, and such as in moving are dilated; toes with perfectly-formed joints, incurvated nails, a spine straight to the tail, and the tail thick, gradually diminishing from the upper part, having a very deep-toned voice, a white colour; and especially such as follow the flock; grey eyes, and a lion-like aspect, whether they have coarse or fine hair. They also make choice of such as have large jaws, and a large neck and throat. But  
you

<sup>m</sup> Cow's milk, in the original.

<sup>n</sup> Correspondent to the *os humeri* in the human frame.

you are to know that the word *neck* expresses all the circumference of the neck, and *auchen* is indeed, in human creatures, the posterior part of the neck, for man stands upright; and in animals it is the upper part of it, for animals bend downward. But when you hear the word *deire*, you are to understand the fore part of the neck, in the human race, but in animals the part of the neck underneath. They also approve the females that are distinguished by the marks already mentioned; having also, in addition, large udders, and teats proportionably large; for there are some which have them dry, and hard as a board, whether the body is covered with rough or fine hair: but a rough coat seems to carry with it a suitable degree of terror. Admission properly takes place at the beginning of the spring, that the offspring may be whelped about the summer solstice, for the female goes with young three months: and as soon as she has pupped, it is proper to throw away the degenerate whelps, or such as have some blemish. Out of seven indeed you ought to leave three or four; and out of three, you ought to leave two. They also litter them with straw, that they may have a soft bed, and that they may be kept warm; for this animal ill bears the cold. The pups are observed to look  
up

up in twenty\* days. But you ought to suffer them to be with their dams two months, and then to wean them. They also rub the pups with bitter almonds pounded with water, about the ears, and between the toes, that neither flies may pitch on them to hurt them, and that vermin may not torment them. They likewise encourage them to fight with each other, yet they do not suffer them to be worried, lest they become timid and cowardly, but that they may be patient under difficulties, and that they may not sink under them. They also use them to confinement, with a thong indeed at first, then with a chain, by degrees. But they do not suffer them to touch the carcasses of dead cattle, lest they be accustomed to them, and they attack them when alive; for they go on, and are difficult to be reclaimed, when they once eat their flesh when raw. You are also to rear your dogs with a view to consanguinity, for they naturally assist one another. But you ought (that wild beasts may not set on them,

\* Pliny says, "The more plentifully they are fed with milk, the later they see, but not beyond the twenty-first day, nor before the seventh," viii. 40. Aristotle says, "The whelps of those which go with young sixty-two days, are blind twelve days: those which go three months have pups that are blind seventeen days. *Hist. Anim.* vi. 20."

them, such as hyænæ and wolves), to protect their throats and necks, as with armour, with sharp nails, at the distance of two inches from each other. If you indeed wish a dog not to desert you, spread bread with butter, and give it him to eat<sup>p</sup>, or measure<sup>q</sup> him with a green reed from head to tail. A dog will certainly follow you, if you tie the chorion<sup>r</sup> of the female, and bring it to him, that he may smell it.

### III.—CONCERNING THE CURE OF DOGS.

You are to confine<sup>s</sup> mad dogs within, and you are to give them nothing to eat for one day: you are then to mix a little hellebore with their drink; and when they are purged, you are to feed them with barley-bread. You are likewise to cure persons bit by mad dogs in the same manner. You are also to destroy fleas with sea-water and brine, then anoint the dogs with cyprine-oil, with hellebore and water, and cumin, and the sour grape,

<sup>p</sup> To lick, in the Greek.

<sup>q</sup> See Æli. N. A. ix. 54.

<sup>r</sup> The external membrane of the fœtus. Saserna prescribed a boiled frog for this purpose.

<sup>s</sup> The original implies, that the dogs were to be confined under ground.

grape, or the root of cucumber<sup>t</sup> with water. But it is better to anoint the body with amurca, for this will cure such as have the mange. Such things as have been prescribed with regard to sheep will destroy vermin, and cure other distempers of these animals, when they are more seriously infected.

#### IV.—CONCERNING HARES.

THE hare is indeed sometimes male and sometimes female, and it changes its natural powers; and it sometimes indeed propagates<sup>u</sup> as a male, and sometimes it produces young as a female.

#### V.—CONCERNING STAGS.

STAGS are afraid of an extended rope that<sup>v</sup> has feathers fixed in it, being frightened at the motion

<sup>t</sup> The wild cucumber is here meant.

<sup>u</sup> If a person that is curious wishes to see an account of this very extraordinary productive power of the male hare, he may consult a dissertation on this subject in *Raccolta d'Opuscoli Scientifici e Filologici*. tom. ii. Venet. 1729.

<sup>v</sup> There is, in modern times, a common method of keeping deer together by means of feathers fixed in lines; and the

motion of the feathers ; but they have no notion of this fear, when they see men standing near them. When they indeed hear melodious pipes and reeds, they do not go away, but, being captivated by the sound, they stand still, and are thus taken. A stag breathing, or drawing its breath, confounds a serpent, and draws it to itself. If a person applies the burnt and powdered tail of a stag with wine to the parts of virility of an animal for admission, he makes him better prepared for the office ; and oil being applied is an impediment to it : and this has the same effect with regard to human creatures.

## VI.—CONCERNING SWINE.

THEY indeed approve sows that have a length and circumference of body, and such as are of a large mould, except the head and feet ; for they that have small heads and short limbs are better, and they that are of one colour are more eligible than the variegated. They also select the boars in this manner, and in addition to the fore-mentioned points : when they have the upper  
part

term used on the occasion by some keepers, is, I believe, called *showelling*. See Virgil. Georg. iii. 372. and *Æneid*, xii. 750.

part of the neck and the shoulders<sup>v</sup> large, and the mane thick; and we call the bristles that grow on the upper part of the neck by this name; and when they have plenty of what is called collops<sup>x</sup>; and we call collops what is generally termed brawny. This animal wants an abundant supply of water, and especially in the summer; and it ill bears the cold, and it is easily affected by it; for which reason they prepare styes for them, out of which they do not drive them in the winter before the frost has disappeared. But dealers that buy them, form their judgment of them from the bristles plucked from the mane; for when they see them bloody<sup>y</sup>, they say that they are diseased; but when clean, the case is totally different. The best season certainly for admission is, from the blowing of Favonius to the vernal equinox, that the offspring may be farrowed about the summer solstice; for the animal goes with young four months. But when they have been impregnated, they separate the boars from them; for, by assailing and wounding them, they become

VOL. II.

T

the

<sup>v</sup> Συνημιαί are properly the joints of the shoulders.

<sup>x</sup> Κόλλοψ. Eustathius and Pausanias said, this word signified the hard skin on the back, and on the upper part of the neck of oxen and swine.

<sup>y</sup> Pliny says the same thing; viii. 51.



the cause of abortion. One boar is sufficient for ten sows. The pigs that are farrowed in the winter forsake the teats, on account of the inclemency of the weather, and on account of their not having a sufficiency of milk, their dams driving them away, because their teats, being destitute of milk, are forcibly tortured and wounded by their teeth. When the sows have also farrowed, they leave the offspring with the dams during two months; they then separate them. They also cover the dam so, that indeed eight months of the year may be allotted to her breeding, and four months to the rearing of her offspring. You are also to confine each breeding-sow in her own sty, that the progeny of different dams may not be intermixed one with another, and that the progeny may be accustomed to their dams, and the dams to the pigs; for if they are intermixed one with another, it is impossible for the dams to know them. But it is better, if every sow rears her own pigs. This animal is chiefly fed with acorns. It is also fatted with wheat-bran, and with refuse from the threshing-floor, and with wheat. Barley also makes the animal get fat, and fit for breeding. Pigs are not infected with pestilential disease, or, when infected, they will be cured, if you throw the root  
of

of asphodel into the water which they drink, or where they are frequently washed.

## VII.—CONCERNING THE CURE OF SWINE.

SWINE will not be infected with disease, if you give them nine<sup>z</sup> river-crabs to eat. Diseased swine are known from the bristles plucked from the upper part of the neck; for if the bristles are indeed clean, they are healthy; but if bloody, or having a thick ichor<sup>a</sup> about them, they are diseased. Democritus, the physician, orders three minæ of the root of asphodel moderately pounded to be mixed with the food of each swine; and he says that it will be perfectly well before the seventh day. If they have a fever, you are to take blood out of the tail; and if they are diseased in the tonsils, you are to take blood from the shoulders. If they are indeed infected with an unknown disease, you are to confine them in the sty during a day and a night, and you are not to set before them food or or drink; but you are to put in water the pounded roots of wild cucumbers for a whole day and a night, and you are to give them this to drink the

T 2

day

<sup>z</sup> Pliny recommends the same; xxxii. 6.

<sup>a</sup> Like an acrid fluid, which comes from wounds.

day following; for, after they have copiously drunk of it, they will, by vomiting, remove the cause of the disease. As this animal is much given to eating, it is very subject to pain<sup>b</sup> of the spleen; having therefore extinguished coals of the tamarisk in water, give it the animal to drink. Wine also poured on coals of the tamarisk instead of water, and drunk, will cure human patients; and Democritus bears undoubted testimony to this. This same Democritus affirms, that it will be a more efficacious<sup>c</sup> remedy to patients for the spleen, if, having heated iron red hot, you extinguish it in water, and you then mix the water with vinegar, and give it the splenetic patient to drink. When swine have indeed been stung by any reptiles, they will be cured by the remedies prescribed for the flock.

### VIII.—CONCERNING WILD SWINE.

If you wish not to be hurt by them, carry the claws of a crab about you.

### IX.

<sup>b</sup> *Splenalgia*. Pain of the spleen, or of the parts about the spleen.

<sup>c</sup> This is prescribed by Celsus ; iv. 9.

IX.—CONCERNING THE SALTING OF ALL KINDS  
OF MEAT.

FLESH dressed<sup>d</sup> and dried, and put in shady and moist places, exposed to the north rather than to the south, keeps fresh for a very considerable time. Snow being put about it, and chaff being poured on, keeps it the sweeter; and you are not to give animals, whose flesh is to be salted, drink the<sup>e</sup> day before. But persons who salt meat ought to rid it of the bones; and parched salt is best adapted to the purpose: and the vessels in which the meat is to be salted, are better when they have had oil and vinegar in them. Goats flesh, and mutton, and venison, are best salted, if, after they have been first sprinkled with salt, the moisture and the animal juice are removed and wiped off, they are again sprinkled with salt, and are then laid among grape-stones not separated from the kernels, so that they<sup>f</sup> may not touch one another, but that the intermediate part may be well supplied with grape-stones: and if you pour sweet must on the meat, it will be much better.

T 3

BOOK

<sup>d</sup> Cleaned, in the Greek.

<sup>e</sup> The day before they are killed.

<sup>f</sup> i. e. the pieces.

## BOOK XX.

## HYPOTHESIS.

These things are in this Book, being indeed the Twentieth, concerning the Select Precepts of Agriculture, and comprising the arrangement concerning the propagating of fish, and the bringing of them from different places into one spot, and concerning the taking of them, and the composition of all kinds of baits that are adapted to the taking of different river and sea fish.

## I.—CONCERNING THE PROPAGATING OF FISH.

**FISH-PONDS** are to be made in an inland situation, the extent one wishes, and has the power to make them; and they are to be filled with fish that breed in river-water; or one may transfer fish<sup>s</sup> from the sea into river water: and persons who are near the sea or a lake, what kind of fish soever the part of the sea produces, stock their artificial pond with them. One is also to

<sup>s</sup> Mixed fish, in the original, which may refer to such fish as live in fresh as well as in salt water.

to adapt them to the nature of the place; and if it is indeed fenny, he is to put in fish that live in fenny situations; and if it is rocky, he is to put in those<sup>b</sup> that are bred in such situations. The tenderest herbage is also thrown in to feed them, and very small fish, and the gills and intestines of fish, and tender figs cut small, and soft cheese, to sea and to rock fish; and squillæ, and gudgeons, or any thing of this kind, one may be supplied with, or some coarse bread, or dry figs cut small. There will also be plenty of fish in any place, if you throw the herb polysporos, which greatly resembles polygonos, well shred, into the water in which fish are bred.

## II.—TO BRING FISH TO ONE PLACE.

HAVING separately pounded, and then mixed with fine sand, and having laid them in the place an hour or two before, pulegium, thymbra<sup>1</sup>, origanum, sampsuchum<sup>2</sup>, three drams of each; the bark of libanotus, myrrh, sinopis, eight drams

T 4

of

<sup>a</sup> Called by the Romans *pisces saxatiles*, because they lived near rocky shores.

<sup>1</sup> *Saturcia*.

<sup>2</sup> Sometimes called *amaracus*; Matth. iii, 40.

of each; half a mina of meal<sup>1</sup> of parched barley reduced to solution in well-flavoured wine; twenty-four drams of roasted hog's liver, an equal quantity of goat-suet, and as much garlic; set your nets. But some throw in the herb delphinium<sup>2</sup>, pounded and sifted, and allure the fish, that they may take them with their hands. Some make up, with mould and bran, half a mina of garlic, or an equal quantity of sesamum, pulegium, origanum, thyme, sampsuchum, thymbra, staphisagria, thirty-two drams of each, sprinkling on them a mina of meal of parched barley, an equal quantity of alica<sup>3</sup>, sixteen drams of libanotus; and they throw them in.

### III.—TO TAKE RIVER-FISH.

POUND mutton suet, parched sesamum, garlic with well-flavoured wine, thyme, dried sampsuchum, an equal quantity of each, and make them up with bread, and throw them in.

### IV.

<sup>1</sup> Αλφίτον.

<sup>2</sup> Consult Matth. lib. iii. c. 70. The original says, the male herb delphinium.

<sup>3</sup> Χονδρος. Pliny prescribes a method of making alica with spelt; lib. xviii. c. 11.

#### IV.—TO BRING ALL KINDS OF FISH INTO ONE PLACE.

POUND separately and together the blood of oxen, goats, sheep, swine, and the fæces out of the small<sup>o</sup> intestines, thyme, organum, pulegium, thymbra, sampsuchum, garlic, the lees of wine of a good flavour, an equal quantity of each, and of the suet of the same animals; and when you have made them into masses, throw them into the places an hour before, then<sup>p</sup> cast your net.

#### V.—FOR TAKING ALL KINDS OF FISH.

HAVING mixed together the blood of a black she-goat, the lees of wine of a good flavour, and a due quantity of meal of parched barley, and having made it up with the lungs of the goat cut small, use it. But if you sprinkle salt on the fishing line, a person will not take a fish.

#### VI.

<sup>o</sup> These, in the human body, are *duodenum, jejunum, et ileum*.

<sup>p</sup> “Then cast your net round them,” in the Greek.



## VI.—CONCERNING THE CATCHING OF FISH.

I WISHED indeed, most<sup>a</sup> honoured Sir, to explain to you the nature of fish, as I may use the expression, and their mode of life, and the breeding and the rearing of them, and the length of their life, and which of them belong to the sea, and which to rivers and to lakes; then to specify which of them are squamous, and which are prickly, and which are smooth; and<sup>r</sup> which have delicate shells; and which are viviparous, and which are oviparous; and which of them are solitary; and which of them devour one another; and which do not at all come near one another. So far did I wish to proceed with active fortitude, that none of the inhabitants of the main might pass unnoted; but we will indeed treat of these in due time: and now, as I perceive some persons ardently desire a dissertation on this subject,<sup>†</sup> and they apply for it in good earnest, I will without hesitation satisfy their expectations on each head, in common, and at the same time, in proper terms, as the subject necessarily requires; and I will throw some light on the different parts of it, from

<sup>a</sup> Supposed to be Constantine.

<sup>†</sup> Μαλακογραφοίς; Athenæus, p. 106. Aristotle *de Generatione Animal.* i. 14. *et de Part. Animal.* ii. 17.

from the documents, which Asclepius<sup>a</sup>, and Ma<sup>1</sup> netho, and Paxamus, and Democritus, have transmitted to us.

## VII.—BAITS FOR FISH.

FOR mullets, the *pastinaca*<sup>t</sup>, *scorpii*<sup>u</sup>, elopes, *phagriv*, *chalkeis*<sup>v</sup>, *scari*<sup>x</sup>, *glauci*<sup>y</sup>, surmullet, *amiæ*<sup>z</sup>, *raphides*<sup>a</sup>, *kallicthues*, *thynni*<sup>b</sup>, *trachuri*<sup>c</sup>, *sacuti*<sup>d</sup>, *melanuri*, *smarides*<sup>e</sup>, *capitones*<sup>f</sup>, *poly-*  
*podes*,

<sup>a</sup> This has been supposed to be an abbreviation of *Asclepiodotus*.

<sup>t</sup> *Sting ray*; in Greek, *τρύγων*.

<sup>v</sup> The father Lasher is now called *σχορπιας*.

<sup>x</sup> Called *pagri*, in Vitelli's translation.

<sup>y</sup> *Fabri* of the Romans.

<sup>z</sup> See Pliny, lib. ix. c. 17.

<sup>y</sup> The blue shark is now called *glaucus*.

<sup>z</sup> Translated *amiari* by Vitelli.

<sup>a</sup> *Raphydi*, in Vitelli.

<sup>b</sup> The tunny is called *thynnus*. Pennant, class iv. 133.  
**Matth. ii. 30.**

<sup>c</sup> The same in Vitelli.

<sup>d</sup> *Sacutori et melanuri*, in Vitelli,

<sup>e</sup> Matth. i. ii. c. 27.

<sup>f</sup> Pennant, class iv. 175.

podes<sup>ε</sup>, vulpeculæ<sup>h</sup>, boves<sup>t</sup>, musculi<sup>k</sup>, mormyri<sup>t</sup>,  
 smyli<sup>m</sup>, sepiæ<sup>n</sup>, phokides<sup>o</sup>, locustæ<sup>p</sup>, the torpedo<sup>q</sup>,  
 inlides<sup>r</sup>, allabetes<sup>s</sup>, sargi, karides, charaki<sup>t</sup>, bu-  
 glossi<sup>u</sup>, auratæ<sup>v</sup>, aleantrides<sup>w</sup>, alosæ<sup>x</sup>, illi<sup>y</sup>, ~~amiae~~ <sup>antise</sup>

<sup>ε</sup> *Polipodi*, in Vitelli.

<sup>h</sup> Long-tailed shark; Pennant, class iv. 44.

<sup>t</sup> The sharp-nosed ray was called *bos*; Pennant, iv. 31.

<sup>k</sup> The whale is called *musculus* by Pliny, lib. xi. c. 37.  
 Pennant, class iv. 16.

<sup>t</sup> *Mormirori*, in Vitelli.

<sup>m</sup> In some manuscripts, the word is written *σμυρι*.

<sup>n</sup> The cuttle-fish was called *sepia*; Pennant, vi. 17. Matth.  
 ii. 20.

<sup>o</sup> *Pholidi*, in Vitelli.

<sup>p</sup> *Locustæ marinae*. *Καραβον*.

<sup>q</sup> Electric ray; Pennant, iv. 36.

<sup>r</sup> *Julidi*, in Vitelli.

<sup>s</sup> *Alabetori*, *sargi*, *squilli*, in Vitelli.

<sup>t</sup> *Cariaciiori*, in Vitelli.

<sup>u</sup> *Βαγλοσσός* is the Greek name of the sole; Pennant, iv.  
 107.

<sup>v</sup> *Χρυσόκεφαλος* is, in English, called *gilt head*; Pennant, iv. 112.

<sup>w</sup> *Aleantride*, in Vitelli.

<sup>x</sup> Shad's Pennant, iv. 104.

<sup>y</sup> *Ιλλορι*, *ανιωρι*, *illori*, *sacri pesci*, in Vitelli. Needham  
 wishes to change *ανιωρι* into *αειδιωρι*. ~~It ought to be αμυρι~~

cordylæ<sup>a</sup>; for small sea-fish, as gudgeons, ascelli<sup>a</sup>, daci<sup>b</sup>, porci<sup>c</sup>, the mustela<sup>d</sup>, the lepidotus<sup>e</sup>, orphus, leucopis, murænæ, coracinif<sup>f</sup>, curabi, anguillæ<sup>g</sup>, buccina<sup>h</sup>, latili, purpuræ<sup>i</sup>, lupi; and for all kinds in every season, and for small fish. The<sup>k</sup> first bait is for large fish; as for julides, glauci, phagri, and likewise for all large fish; for this bait as soon as it is set on the hook, and touches the water, the small, fearing the arrival of the large fish withdraw, and the large fish, tempted by the natural sweetness of the bait, come out of their haunts, although they may be two

<sup>a</sup> Σαρδύλων, in the Greek. *Cordylari*, in Vitelli.

<sup>b</sup> Γαριδάων. The same in Vitelli.

<sup>c</sup> The same in Vitelli.

<sup>d</sup> The same in Vitelli.

<sup>e</sup> The bearded cod. Pennant, iv. 87.

<sup>f</sup> *Lepidoti, orphi, leucopidi, murene*, in Vitelli.

<sup>g</sup> The same in Vitelli.

<sup>h</sup> Eels.

<sup>i</sup> Κηρυκων.

<sup>j</sup> More than one species in the Italian seas. Pennant, vi. 74.

<sup>k</sup> The first that is prescribed. It is possible the author may mean the bait recommended in the next section. It is to be wished this chapter had come down with fewer indications of imperfection.

two stadia<sup>1</sup> distant, and from a natural propensity they play and contend with each other, and being attracted with pleasure, they neither struggle nor run away with the fishing-line.

### VIII.—COMPOSITION OF BAIT.

OF the silurus<sup>m</sup> and of oats, eight drams; of<sup>a</sup> the down of thistle, of anise, of cheese made of goats milk, four drams of each; two drams of opoponax<sup>o</sup>; four drams of the blood of a hog; four drams of galbanum: pound them carefully apart; and having mixed them together, pour some genuine rough wine on them; and having made them into collyria<sup>p</sup>, as you do suffumigations, dry them in the shade.

### IX.

<sup>1</sup> The Greek *stadion* consisted of a hundred English paces, 4 ft. 4. 5 inches.

<sup>m</sup> Matth. l. ii. c. 26.

<sup>a</sup> Of the flying down, of light colour, in the Greek.

<sup>o</sup> Sometimes called *heracleum*; Matth. iii. 50.

<sup>p</sup> The *collyria* of the Greeks were so called from their form. They had their *ξηροκαλλυρία* and *υγροκαλλυρία*.

IX. — ANOTHER COMPOSITION FOR LARGE CORACINI ONLY, AN EXCELLENT BAIT. *ἰσχυρὸν*

EIGHT scruples of parched lentils, a dram of parched cumin, of sour grapes and raw mullet four drams, four drams of coronopodium<sup>a</sup>, a dram of bitter, that is, of crude anthyalia,<sup>b</sup> four drams of dried date, a dram of castor<sup>c</sup>: having pounded them all quite fine, make them up with the juice of anethum<sup>d</sup>; and having made them into collyria, use them.

X. — FOR RIVER-FISH, WHICH OPIAN USED.

HAVING cut some veal into very small pieces, put it in a pot<sup>e</sup> with the calf's blood, and let it remain during ten days, and then use it for bait.

XI. — BAIT TO WHICH FISH PROMPTLY COME.

MAKE up some meal of parched barley, and throw in the pellets that are made of it.

XII.

<sup>a</sup> Pliny, xxi. 16.      <sup>b</sup> Called *anthyllis*, Matth. l. iiii. c. 136.

<sup>c</sup> Matth. l. ii. c. 23.

<sup>d</sup> Dill, or anet.

<sup>e</sup> The original implies it was a cup of Lacedemonian make.

## XII.—FOR SMALL RIVER-FISH.

HAVING mixed two minæ of the bran of barley, and a chœnix of whole lentils, macerate them in a sufficient quantity of unadulterated garum<sup>v</sup>, and add a chœnix of sesamum, and scatter a little of this, and throw it about in the water; for as soon as you have dispersed it, all the small fish will come to it, although they may be five stadia distant, they will come to the same spot: but the large fish will fly away from the smell. Use it then in this manner, and it will ensure success.

## XIII.—FOR THE FISH CALLED PORCI.

HAVING pounded four drams of sesamum, two drams of cloves of garlic, two drams of the flesh of the quail, well seasoned, a dram of opoponax, make them up with strigmentum<sup>w</sup>; and having formed them into collyria, use them.

## XIV.

<sup>v</sup> See chap. 46.

<sup>w</sup> In Greek γλοιος, which meant the sordes scraped from the skin in the *gymnasia*, or places of exercise. The Greek word sometimes means the sordes of oil.

## XIV.—FOR EELS.

TAKE eight drams of the sea scolopendra, eight drams of river<sup>x</sup> squillæ, one dram of sesamum, and use them.

XV.—BAIT FOR SEA<sup>y</sup> MULLET.

POUND and mix all together a small quantity of malabathrum<sup>z</sup>, ten grains of pepper, three grains of melanthum, the flowers of the sweet rush, and some put in a little of the inside, then macerate the crumbs of fine bread in a cotyla of Mareotic<sup>a</sup> wine, and take them up when dry, and having<sup>b</sup> made them up, use them for bait.

VOL. II.

U

XVI.

<sup>x</sup> It appears from this passage that there were river as well as sea squillæ.

<sup>y</sup> The mullet is reckoned among the *pisces littorales*; the species mentioned here probably lived more towards the main sea.

<sup>z</sup> By way of eminence called *folium*. The tembul of Avicenna; Matth. i. 11.

<sup>a</sup> The vines which produced this, are mentioned by Virgil, G. ii. 91.

<sup>b</sup> United, is the Greek expression.



**XVI.—ANOTHER EXCELLENT BAIT, AND FIT FOR NO OTHER BUT FOR THE BEST MULLET.**

HAVING pounded four drams of the liver of the tunny, eight drams of sea squillæ, four drams of sesamum, eight drams of bean-flour, two drams of crude amia<sup>c</sup>, mix them with sapa; and having made them into collyria, use them for bait.

**XVII.—BAIT FOR SEA MULLET.**

PUT the member<sup>d</sup> of a ram into a new pot, and having covered it with another pot, stop it so that it may have no vent, and send it to the glass furnace to be set on from the morning to the evening, and you will find it become<sup>e</sup> quite tender; then use it for bait.

**XVIII.—A CONVENIENT PREPARATION, THAT THE FISH MAY COME TO THE SAME SPOT.**

TAKE three patellæ,<sup>f</sup> that are produced on rocks, and having taken out the fish, inscribe on the

<sup>c</sup> Mentioned in c. 7.

<sup>d</sup> Το μέσον

<sup>e</sup> Tender as cheese, in the Greek.

<sup>f</sup> See Aristotle, Hist. An. lib. iv. c. 4; and Athenæus, lib. iii. p. 85. The English name is *limpet*, in Greek λεπας.

the shell the words which follow, and you will immediately see the fish come to the same place, in a surprising manner. The words are, *the God of Armies*, and the fishermen make use of them.

**XIX.—**BAIT FOR SURMULLETS AND LARGE SCABI, THAT THEY MAY BE ATTRACTED BY IT, TO WHICH NONE OF THE SMALL FISH MAKE THEIR APPROACH, ON ACCOUNT OF THE UNSAVOURINESS OF THE BAIT. BUT THE COMPOSITION IS NATURALLY OF AN ATTRACTIVE QUALITY.

HAVING well pounded eight drams of the flesh of the river fish typhlinus<sup>§</sup>, eight drams of parched lentils, four drams of river squillæ, one dram of malabathrum, make them up with the white of an egg, and having made them into collyria, use them.

**XX.—**FOR ALL LARGE SEA-FISH, AS GLAUCI, ORPHI, AND FISH OF THIS KIND.

THE testes of a cock, with cones of the pine, both being parched and pounded, eight drams

U 2

indeed

<sup>§</sup> Said, on the authority of Hesychius, to be an inhabitant of the Nile.

indeed of the former, and sixteen drams of the cones of the pine, are pounded as fine as flour; and they are made up as collyria, and they are set as bait for the fish.

### XXI.—FOR MURÆNÆ.

HAVING pounded sixteen drams of the river silurus, eight drams of the seed of wild rue, eight drams of veal suet, sixteen drams of sesamum, and having made them into collyria, use them.

### XXII.—FOR POLYPODES<sup>b</sup> AND SEPIÆ.

WELL pound and make into collyria, sixteen drams of sal ammoniac, eight drams of butter made from goats milk, and rub the ropes, or sails that are not hemmed, with them, for then the fish will feed round them, and they will not go away; and do you draw up and pour into the boat the locustæ, murices, porphuræ, and whatever fish there are.

### XXIII.—FOR OTHER KINDS OF FISH.

Mix eight drams of sal ammoniac, a dram of onion, six drams of veal suet; make the hooks  
of

<sup>b</sup> In Latin *polypi*, inhabitants of the Adriatic. See Lemery, *Traité des Drogues*; and Matth. ii. 20.

of a sea-green colour, and having rubbed them with the preparation, use them; and the fish will spontaneously come, being attracted by the smell, and they will thus be taken.

#### XXIV.—BAIT FOR ALL FISH IN EVERY SEASON.

TAKE four drams of the leaves of Celtic nard, one dram of cypcrus, a small quantity of Egyptian smyrnium<sup>1</sup>, as much cumin as you can hold between three fingers, a handful of the seed of anethum; having pounded and sifted them, pour them into a reed; and taking worms or similar productions, wash them, and put them in a vessel, and press out the moisture of agrostis<sup>2</sup> on the spot, and mix a sufficient quantity of the composition, and putting the worms into the mass, bruise them, and then lay your bait.

#### XXV.—FOR SMALL FISH.

A CHÆNIX of river squillæ is macerated in the genuine brine of salted coracini, and is seasoned during two days; on the third day lay your

U 3

bait:

<sup>1</sup> *Olusatrum* in Latin; Matth. lib. iii. c. 65.

<sup>2</sup> The text is here rather embarrassed.

bait: and fish with two reeds<sup>1</sup>, having four hooks each; and having an assistant with you, you will take such a quantity, that you will not be outdone by the cast net, nor by the other common net of the fishermen.

#### XXVI.—UNIVERSAL BAITS.

HAVING well pounded and mixed lentils with dry amyllum, make use of them.

#### XXVII.—FOR ALL SMALL FISH.

TAKE the flesh<sup>m</sup> of snails, without the tails, and bait with them, not using too great a quantity.

#### XXVIII.—CONCERNING WHEELS.

THE dregs of myrobalanum<sup>n</sup>, human fæces, fine bread, pound each by itself, and mix the three ingredients, and put them into the wheel, and use them, and they will be efficacious.

#### XXIX.—ANOTHER CONCERNING WHEELS.

A BAIT which fishermen make use of, as I have found it prescribed. Take the shells that  
are

<sup>1</sup> Δυσὶ καλάμοις.

<sup>m</sup> Τῇ σαρκί.

<sup>n</sup> *Glans unguentaria* of the Romans, Matth. iv. 154.

are called *pomatia*<sup>o</sup>, that grow on rocks, and the insides of them, and fish with them.

### XXX.—FOR SEA MULLETS.

Mix a dram of the shell of the sepia with green sisymbrium, and with water, and with fine flour, and with cheese made from cows milk, and make use of it.

### XXXI.—FOR SCORPION ONLY.

EIGHT drams of saw-dust of the sycamore, and of the stem of the artichoke, and of sandarach<sup>o</sup>, with five caterpillars, that are found on cabbages, and wheat well pounded; having mixed them with sand, and poured water on them, make them into pellets, and bait with them.

### XXXII.—FOR SEA PHAGRI.

Mix a decoction of melanthium with locustæ and round worms, and with wheat flour; then

U 4

pour

<sup>o</sup> Thus called from their *operculum*. Pennant, vi. 128.

<sup>p</sup> The *sandarach* of the Greeks was a kind of arsenic, called by the Romans *auripigmentum*. The Arabs called the gum which flowed from the juniper, by this name. Matth. v. 31.

pour on some water, and having made them of the consistence of honey, bait with them.

### XXXIII.—FOR RAPHIDES<sup>1</sup> ONLY.

MAKE up the gall of a calf with the meal of parched barley, and oil, and water, into pellets, and bait with it; and having masticated it, spit it into the water, and the fish will make their approach.

### XXXIV.—FOR TUNNIES ONLY.

HAVING burnt walnuts to ashes, and having pounded them quite fine with sampsuchum, and with fine bread macerated in water, and with goats cheese, and having made them into pellets, make use of them.

### XXXV.—FOR SMARIDES.

HAVING pounded garlic with bread, and with cheese made of goats and cows milk, and with fine flour, and having made it into balls, bait with it.

### XXXVI.

<sup>1</sup> The Latin name of this species is *acus*; in English, the pipe fish.

## XXXVI.—FOR THE RAY.

HAVING soaked pigeons dung with the finest flour, make it up.

## XXXVII.—ANOTHER FOR THE SAME PURPOSE.

HAVING boiled lettuce-seed, and having poured butter and the finest flour on it, make it up.

## XXXVIII.—FOR SALPÆ.

HAVING boiled green moss from a rock with oil, bait with it.

## XXXIX.—FOR GLAUCI.

HAVING broiled and boned the fish called *amiae*, *callichthues*, and *shads*, and having added to them moss and coarse<sup>†</sup> barley-meal, and having made them into balls, bait with them.

## XL.—FOR TRACHURI.

HAVING macerated asinine<sup>‡</sup> fæces in the juice of coriander, and having made them into balls with fine flour, bait with them.

## XII.

<sup>†</sup> In Greek *σιμιδαλις*; in Latin, *similago*.

<sup>‡</sup> See Pliny, lib. ix. c. 18.

<sup>‡</sup> *Κριμνον*, in Greek.

<sup>‡</sup> The authenticity of the Greek word has been questioned.



## XLI.—FOR MULLET, &amp;c.

HAVING mixed together bread made of fine flour and goats cheese, and asbestos<sup>v</sup>, pound them, and pour sea-water on them; and making them into balls, bait with them.

## XLII.—FOR POLYPODES.

HAVING tied some small mormyri<sup>w</sup> round a strong line, you are to bait with them.

## XLIII.—FOR SEPIÆ ONLY.

HAVING pounded lees of wine with oil without water, and proceeding to the place, throw them into the sea; and seeing that the lees descend, they will emit the cuttle-liquid<sup>x</sup>, and they will come to the place in which the oil has appeared; and so take them.

## XLIV.—FOR LOCUSTÆ.

HAVING securely tied a mormyrus, pound ten porphyreæ with oil, and scatter a little moss on the rock, and you will take them.

## XLV.

<sup>v</sup> Amianthus and quicklime has each this name.

<sup>w</sup> Pliny, ix. 23.

<sup>x</sup> See Pliny, ix. 29.

## XLV.—FOR MELANURI.

TAKE a goat's liver, and bait your hooks with it. We have also found another bait for sea prey, and for many other fish, the hoof<sup>y</sup> of a goat or of an ass.

## XLVI.—COMPOSITION OF GARUM.

WHAT is called *liquamen* is thus made: the intestines of fish are thrown into a vessel, and are salted; and small fish, especially atherinæ<sup>z</sup>, or small mullets, or mænæ<sup>a</sup>, or lycostomi<sup>b</sup>, or any small fish, are all salted in the same manner; and they are seasoned in the sun, and frequently turned; and when they have been seasoned in the heat, the garum<sup>c</sup> is thus taken from them. A small basket of close texture is laid in the vessel filled with the small fish already mentioned, and the garum will flow into the basket; and they take  
up

<sup>y</sup> In the original thus expressed: "Use as bait the hoof of a goat or of an ass."

<sup>z</sup> Atherine in Vitelli.

<sup>a</sup> Described by Matthioli, lib. ii. c. 28.

<sup>b</sup> Called by Aristotle and Ælianus *καλλιωνομοι*; Arist. H. A. lib. viii. c. 13. Ælian. H. A. lib. xiii. c. 4.

<sup>c</sup> See Pliny, xxxi. 7.

up what has been percolated through the basket, which is called *liquamen*<sup>d</sup>; and the remainder of the feculence is made into alec<sup>e</sup>. But the Bithynians prepare it in this manner: they indeed take small, or large mænæ, which are more eligible; but if they cannot get them, lycostomi or sauri<sup>f</sup>, or scombri<sup>g</sup>, or alec, and a mixture of all; and they throw them into a baking-trough, in which they have been used to mix their meal; and having applied two Italian sextarii of salt to a modius<sup>h</sup> of the fish, they work them, that they may be mixed with the salt; and having suffered them to lie during one night, they put them into an earthen vessel; and they set this in the sun during two or three months, stirring them with a stick at stated periods; they then take and stop them and lay them by. Some indeed pour two sextarii of old wine on a sextarius of fish. But if you wish to use the garum immediately, that is, not to insolate it, but to boil it, you are to do it in this manner: take some strong brine that is proved,

<sup>d</sup> See Isidor. Orig. xx. 3.

<sup>e</sup> Pliny mentions how it was made, &c. in the chapter already cited.

<sup>f</sup> Called by the Romans *lacerti*.

<sup>g</sup> Mackarel.

<sup>h</sup> One peck 7.68 sol. inches in English corn measure.

proved, so that an egg being put into it may swim (but if it sinks, it has not a sufficient quantity of salt); then throw the fish into the brine, in a new pot, and adding some origanum, set it over a good fire, until it boils, that is, until it begins to be a little diminished (some also add sapa to it); then when it is cool, pour it into a strainer a second and a third time, until it comes out clear; and having stopped it, lay it by. But the best garum, which is called *aimation*<sup>1</sup>, is thus made: the intestines of the tunny, with the gills, and the ichor<sup>\*</sup>, and the blood, are taken, and they are sprinkled with a sufficient quantity of salt; and they are left in the vessel during two months in general; the vessel being then tapped, the garum called *aimation* is drawn<sup>1</sup>.

<sup>1</sup> The Lacedemonians had what the Romans called *jus nigrum*, which was termed *aquaria*, from which it is possible this composition derived its name.

<sup>\*</sup> Watery humour like serum.

<sup>1</sup> Comes out, is the Greek expression.

THE END.

---

W. Spilsbury, Printer, 57, Snowhill, London.



















June 196

June 196 205

June 196 210









